NATIONAL GEOGRAPHIC SOCIETY
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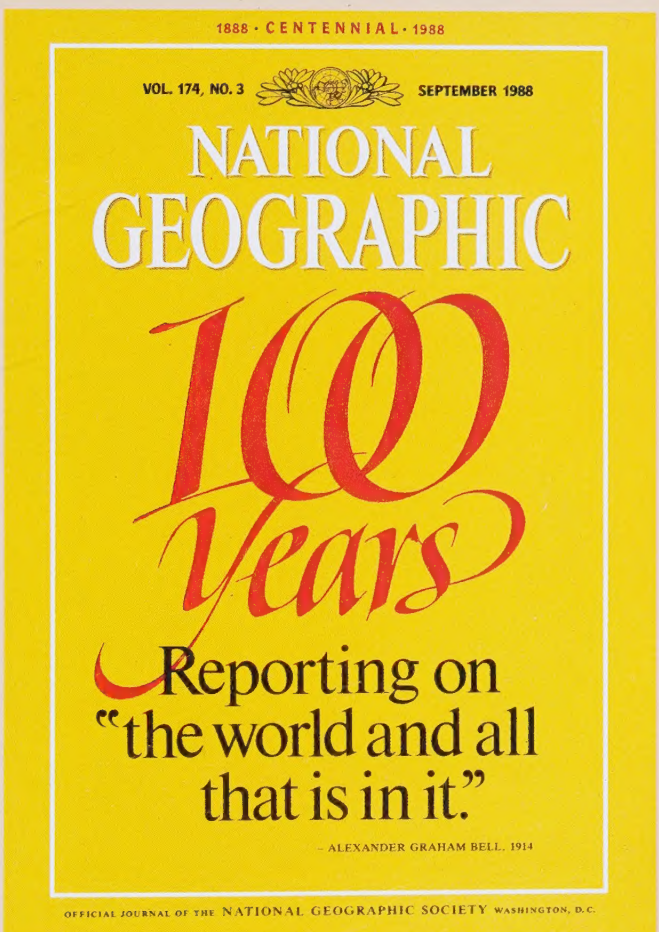
Witness to a Century

"When we embark on the great ocean of discovery, the horizon of the unknown advances with us and surrounds us wherever we go. The more we know, the greater we find is our ignorance."

GARDINER GREENE HUBBARD
President, National Geographic Society, 1888


1888 · CENTENNIAL · 1988
VOL. 174, NO. 3
SEPTEMBER 1988
NATIONAL GEOGRAPHIC
100 Years
Reporting on "the world and all that is in it."
– ALEXANDER GRAHAM BELL, 1914
OFFICIAL JOURNAL OF THE NATIONAL GEOGRAPHIC SOCIETY WASHINGTON, D.C.

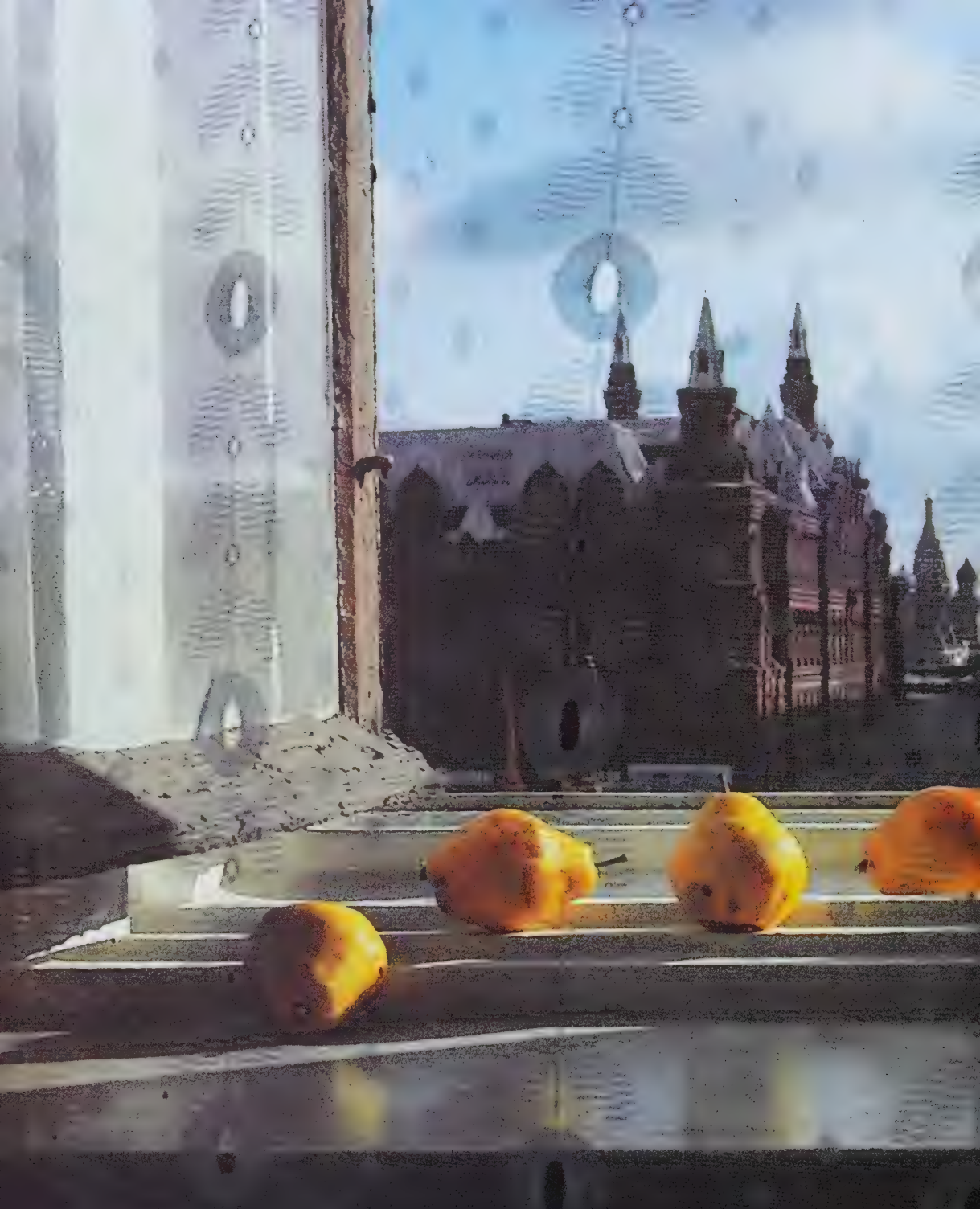
Wonders of the ancient world, Egypt's Sphinx and Great Pyramid of Khufu, seen here in 1918, have intrigued the imagination for centuries.

DONALD McLEISH

Convulsions of an ever changing earth light the night on the Soviet Union's Kamchatka Peninsula, site of some 20 active volcanoes.
VADIM GIPPENREITER

A torrent of wildebeests plunges over a precipice to cross a river in Tanzania's Serengeti National Park, a premier wildlife refuge.

Haunted look of famine in their eyes, refugees in Ethiopia gather at a feeding center run by the International Committee of the Red Cross.
STEVE RAYMER, NGS



Pears ripen in a hotel room window overlooking the Kremlin, a view evoking the 19th-century Moscow of Leo Tolstoy and the characters he created.

SAM ABELL

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On a 1984 rescue mission, astronaut Dale A. Gardner will secure this satellite with the "stinger" he holds to return it to the space shuttle.

NASA

A publication of the
NATIONAL GEOGRAPHIC SOCIETY

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Library of Congress CIP Data: page 1215

Lasting Value from Constant Change

By WILBUR E. GARRETT EDITOR

WHEN THE FIRST NATIONAL GEOGRAPHIC magazine appeared in 1888, the United States of America totaled only 38 states, Turks of the Ottoman Empire occupied the Holy Land, and Tsar Alexander III ruled Russia—though revolution was brewing. Scarcely a hundred years old, the U.S. was a serious young country convinced of its "manifest destiny." Serious men in Washington, D.C., felt the country needed a new geographic society so that "we may all know more of the world upon which we live" and founded one. Within a year they published the first issue of a magazine as their new society's principal means for the "increase and diffusion of geographic knowledge."

Now, some 7,000 magazine articles later, we bring you an index to the first century of that unending quest—a sort of field guide to a fabulous century that has packed within it a millennium's worth of social and political evolutions and revolutions and a mind-numbing cornucopia of scientific discoveries.

As a nation we've come from stampeding west and conquering the wilderness to voicing serious concern about saving what's left. As a magazine we've come from articles stressing the contributions of immigrant labor in a growing industrial complex to a 1988 report on the alarming surge of world population and overconsumption of natural resources by wealthy nations. The latter, as author Paul R. Ehrlich put it, "tends to undermine the life-support capacity of the entire planet."

This index attests that we as the Society and magazine have survived both as witnesses and players in a century that, like a runaway carousel, has seemed to move faster and faster. Yet we ride into our second century with a grip as strong as ever by heeding the editorial policies Gilbert H. Grosvenor developed and followed for more than 50 years. Late in life the "Chief" wrote about those pole stars of his career: "One principle was absolute accuracy. Others required that each article be of permanent value and avoid partisanship and controversy."

The last can no longer be avoided, nor is it always desirable or even responsible to do so. Ironically, absolute accuracy—still a goal—often makes controversy unavoidable. It is, however, possible and absolutely necessary to avoid partisanship.

As with the magazine's articles, we hope this volume itself will prove of lasting value—and not just as an index to a century of reporting. We hope that each essay, entry, page, and illustration will serve as a cue card for your memory and thereby better equip you to deal with a hard-charging future. The past is indeed prologue, but useful only if you know it.

Twice the subject of David Alan Harvey's photography, an elder from the Guatemalan highlands appears little changed in the 13 years since his 1975 appearance in a magazine article on the Maya.

Going again and again to the far corners of the world has been the essential job of NATIONAL GEOGRAPHIC writers and photographers for a century. The purpose is, of course, firsthand reporting. And sometimes after arduous journeying to such out-of-the-way places a staffer may encounter in a village a headman who exclaims, "Oh, the GEOGRAPHIC. Give my regards to Luis Marden."

DAVID ALAN HARVEY

"Let the World Hear From You"

The inventor, the architect, and the spiritual leader

By CHARLES McCARRY EDITOR-AT-LARGE

On May 8, 1902, the volcano Pelée erupted on the Caribbean island of Martinique, releasing a pall of superheated ash and steam that killed nearly every man, woman, and child in the French colonial city of St. Pierre. A convict who happened to be confined in a dungeon and two or three others survived, but at least 30,000 lives were lost.

When news of the disaster reached Washington, Gilbert Hovey Grosvenor, the youthful Managing Editor of the monthly magazine of the National Geographic Society, telegraphed the Society's President, who was vacationing in Nova Scotia, to ask if he would approve spending $1,000 to send a two-man scientific expedition to the scene of the eruption. Grosvenor received the following reply:

Go yourself to Martinique in interests of Magazine and I will pay your expenses. . . . This is the opportunity of a lifetime—seize it. Start within 24 hours and let the world hear from you as our representative. Leave Science to . . . others and give us details of living interest beautifully illustrated by photographs.

—ALEXANDER GRAHAM BELL

Bell's telegram was the first true charter of this magazine, and every Editor since Grosvenor has been guided by Bell's masterly instructions to be decisive and quick in sending people and cameras all over the world to bring back "details of living interest beautifully illustrated by photographs."

When Bell became the second President of the National Geographic Society in January 1898, it had only about a thousand members, most of them in the District of Columbia, and debts of nearly $2,000. Bell did not want the job. He was not a geographer, and he was occupied with his inventions—among innumerable other projects, he was attempting to invent the airplane through experiments with tetrahedral kites.

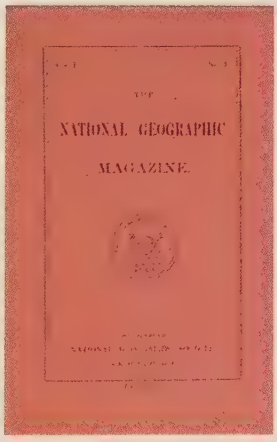
As he later wrote in his diary, he became President of the Society only "in order to save it." Family feeling was involved also: The Society's first President, who died in 1897, was Bell's father-in-law, the lawyer and entrepreneur Gardiner Greene Hubbard.

Bell saw THE NATIONAL GEOGRAPHIC MAGAZINE as the means of

Editing took no holiday for Gilbert H. Grosvenor who bent to the task under a tent at the family's Nova Scotia summer place in about 1910. Giving counsel is his inventor father-in-law, and second National Geographic Society President, Alexander Graham Bell. Leaning on his chair is son Melville (who became Editor in 1957), while daughter Gertrude sits in front.

By 1910 Grosvenor, with Bell's encouragement, had taken a magazine begun as a drab scientific journal (below) and given it a popular style, including the first printing of photographs in color.

J.A.D. McCURDY



OCTOBER 1888

This text appeared in substantially the same form as "Three Men Who Made the Magazine," *National Geographic,* September 1988.

building a great organization that would permit anyone who was interested in the world to participate, as a member of the Society, in its exploration and discovery. Hitherto the privilege of supporting the great private expeditions that fascinated the 19th-century public with reports of strange peoples, inaccessible places, and great ordeals had belonged to a few scientists and men of wealth.

But Bell understood, as Gilbert Grosvenor remarked many years later, that "the simplest man takes pride in supporting research." This idea, more than any other, has been the basis for the growth of the Society and for the popularity of its magazine.

Bell himself loved reading encyclopedias—"articles not too long, constant change in the subjects of thought, always learning something I have not known before." Though he may not have thought of his plan in exactly this way, he set out to turn the magazine into the perpetual encyclopedia that it has since become.

Other members of the Board of Managers strenuously opposed opening membership to men and women who had no qualification for it other than an intelligent interest in the world and all that was in it, but Bell prevailed.

"I can well remember . . . how the idea was laughed at that we should ever reach a membership of ten thousand," Bell said at the National Geographic banquet in 1912. "Why, it was ridiculous!"

Yet by 1912 the Society had increased its membership more than a hundredfold, to 107,000. Prudent management of the Society's funds was providing an annual surplus of $43,000 to be devoted to the promotion of geographic science.

All this, Bell said, was primarily due to one man, Gilbert Grosvenor, who in less than 13 years had transformed the NATIONAL

Guiding lights of a fledgling enterprise, Alexander Graham Bell, right, and his son-in-law, Gilbert H. Grosvenor, walk arm in arm.

On the threshold of America's entry into World War I, 150 Geographic employees follow their young Editor, his wife, Elsie, and the Society's Assistant Secretary George W. Hutchison down Pennsylvania Avenue in Washington, D.C., during the Preparedness Parade, June 14, 1916. Led by President Woodrow Wilson, some 60,000 Washingtonians turned out that day to support the war overseas. Spurred by interest in the Society's new map of Europe, membership in 1916 reached a half million.

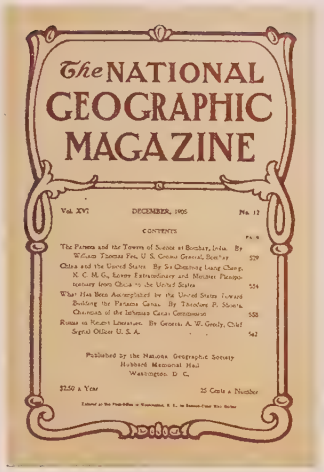
THE BETTMANN ARCHIVE (ABOVE); GRACE ADAMS

GEOGRAPHIC into "the greatest educational journal of the world."

Grosvenor was an unlikely candidate for such striking success. When Bell hired him on April Fools' Day, 1899, he was a slender, energetic 23-year-old preparatory-school teacher who had made an outstanding academic record and been a famous tennis player at Amherst College in Massachusetts but had not a single day of experience in the magazine business.

Bell had offered the opportunity to apply for the job to Grosvenor and his identical twin brother. Edwin, the younger twin by about an hour, planned a career as a lawyer, but Bert was deeply interested in Bell's offer.

He was already in love with the Bells' comely young daughter, Elsie May, whom he had gotten to know when her parents invited the twins to visit them in Nova Scotia in the summer of 1897. It was Elsie Bell who had suggested to her father that Bert might be the promising young man he had been looking for.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Published by the National Geographic Society Hubbard Memorial Hall Washington, D. C.

$2.50 a Year 25 Cents a Number

DECEMBER 1905

BELL HIRED Grosvenor at $100 a month, giving him the title of Assistant Editor and the mission of breathing new life into the GEOGRAPHIC. He also offered to put up $87,000 in capital—the same amount Bell and Gardiner Greene Hubbard had lost in an unsuccessful effort to popularize another magazine, *Science,* before selling their interest for $25.

Grosvenor refused, protesting that he lacked the experience to handle such a vast sum (the equivalent of more than one million dollars in today's currency). He said that he believed that new ideas and hard work, rather than an infusion of money, were the answers to the magazine's problems.

A Native American by the name of Two Whistles, a Crow Indian, achieved a measure of immortality in a photogravure by Edward S. Curtis. Concerned that future generations would never know the richness and diversity of what he considered a "vanishing race," Curtis photographed more than 80 tribes west of the Mississippi between 1900 and 1927. The 20 volumes of photographs and text that resulted are among the most thorough documents of North American Indian life ever produced. The National Geographic, which published a collection of his photographs in July 1907, boasts a complete set of his published volumes in its rare book collection.

EDWARD S. CURTIS

The unpaid Editor was English-born John Hyde, a Department of Agriculture statistician. Grosvenor believed that Hyde and a staff of 12 associate editors, also unpaid, were producing a magazine filled with "cold geographic fact, expressed in hieroglyphic terms which the layman could not understand." In fact, Hyde's magazine contained some colorful, even controversial writing. Hyde was no fainthearted editor where photographs were concerned, either. He published in November 1896 the first photograph of a bare-breasted woman to appear in the magazine.

Despite Bell's plan to change the style of the magazine, Grosvenor had no authority to do so. Nonetheless he went at his new job with a will, nominating his father, his twin brother, and his older brother, Asa, for membership, and pestering his father, Bell, and other eminent men to nominate their friends. The annual membership fee was then two dollars (worth about $28 in today's money), and by November 1899 he had signed up 750 new members.

In his efforts to brighten the magazine's pages, Grosvenor importuned his father to approach his old friend Gen. Lew Wallace, the author of *Ben Hur,* to contribute an article.

THEN AS LATER, Bert seemed to act on the principle that any problem could be solved by a combination of hard work, frank conversation, and good connections. In January 1904 Bell cabled Bert from Gibraltar asking that he arrange a "national reception" for the remains of James Smithson, which Bell was bringing from Genoa for reburial. The 28-year-old Grosvenor asked President Theodore Roosevelt for an American warship to transport Smithson's remains from New York to Washington. Roosevelt detailed the U.S.S. *Dolphin* for this mission. Grosvenor then persuaded the War Department to provide a military escort to accompany the casket of the benefactor of the Smithsonian Institution through the streets of Washington.

Inevitably Bert Grosvenor's youthful brashness and energy brought him into conflict with the anti-Bell faction—some of whom, Bert noted, had "long white beards."

"I do not intend to get out of their way, as they plainly hint they want me to," he wrote to Bell on August 6, 1900. A week earlier he had written these words to his father: "Mr. Hyde is bent on remaining editor and knows that if I stay in, he will go out. . . . Outwardly I am very respectful and submissive, though it makes me boil."

It was a hot summer in Washington, with more than 50 days when the temperature went up to 90 degrees. Grosvenor sought relief from the heat by going out onto the fire escape of the Corcoran Building, where the Society's two-room headquarters was located, and listening to the jolly tunes of a hurdy-gurdy playing in 15th Street below. He found surcease from his battles with Hyde and the whitebeards by describing them in heartfelt letters to Elsie Bell, who was traveling in Europe with her parents.

His tales of intrigue, treachery, and insult had effect. On August 30, 1900, Grosvenor received a letter from Elsie in which she promised to marry him. "I've got her at last and she won't get away—and won't try to, either," a triumphant Bert wrote his mother.

"I doubt whether Elsie would have been as sure of her own mind," Mrs. Bell wrote to Mrs. Grosvenor, "if all her love and sympathy had not been aroused by her indignation at the attacks upon him." The turning point came when Bert was threatened with dismissal. Bell returned posthaste from Europe "to see what I can do for my boy." The Board of Managers gave Grosvenor an $800 raise and the title of Managing Editor.

The infighting that marked this situation left a lasting residue of resentment. Sixty-two years later, in an interview with Assistant Editor Allan C. Fisher, Jr., Grosvenor described his opponents as "real stinkers."

S. S. McClure, the famous editor of *McClure's Magazine,* had recommended that the NATIONAL GEOGRAPHIC change its name, move to New York, abandon the membership idea in favor of newsstand sales, and avoid all mention of the National Geographic Society on grounds that geography was an uninteresting subject. Grosvenor had opposed all these ideas.

When he and Elsie returned from their honeymoon, they learned that the Executive Committee had arranged to have the magazine printed in New York.

Grosvenor canceled the printing contract on his authority as Managing Editor without consulting anyone and brought the magazine home to Washington, where he had it printed at half the cost.

This resolute action completed the rout of the opposition. In February 1903 Grosvenor was made the Editor of the magazine and Director of the Society. At the age of 27, Bert Grosvenor was in charge of everything.

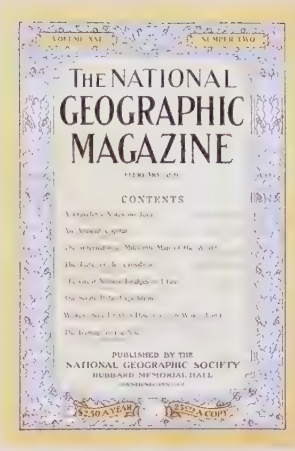
Thereafter very few people outside the family, and almost no one at the Geographic, ever called him "Bert."

Dr. Melvin M. Payne, who came to the Geographic as a secretary in 1932 and rose to be Chairman of the Board of Trustees, says that he never heard anyone but Rear Adm. Richard E. Byrd and John Oliver La Gorce, the first member of the staff hired by Grosvenor, address him by his nickname. "Oh, he was it, the boss in every respect, no questions about that," says Dr. Payne.

EVERY EDITOR who came after Grosvenor has been, as he was and believed the Editor must be, an absolute monarch whose opinions, judgment, and word are final in everything having to do with the magazine.

Although Bell retired as President in 1903, the year after Hubbard Memorial Hall was donated by the family of Gardiner Greene Hubbard as the Society's first real headquarters, his interest in the magazine did not flag. Bell frequently sent his son-in-law story ideas, as well as packages of photographs, clippings, and advice on the technique of editing. Grosvenor did not always find Bell's suggestions practical. "Mr. Bell was always anxious to be an editor," he dryly observed to Allan Fisher in 1962.

Bell kept on urging Grosvenor to travel for the magazine. "Alec won't be content until Bert goes somewhere," Mrs. Bell wrote in 1902. "[This time] it is to the wilds of Newfoundland to ascertain the truth . . . of a mysterious valley shut in among mountains with a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PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL

FEBRUARY 1910

A daring groundbreaker in its time, this picture of a Zulu man and his bride appeared in the November 1896 issue of the GEOGRAPHIC. It marked the beginning of the policy to show the peoples of the world as they are—a decision that, over the years, has sparked many a joke and cartoon. The accompanying article, "The Witwatersrand and the Revolt of the Uitlanders," was an ethnocentric description of an armed rebellion by British and other mining entrepreneurs against the Boer government during the early history of South Africa's gold industry.

still more mysterious river that disappears into the face of a perpendicular cliff 1,500 ft. high and goes—no one knows whither."

In 1907, responding to a request from Elsie Bell Grosvenor for his thoughts on the magazine, Bell wrote,"The features of most interest are the illustrations. . . . The disappointing feature of the Magazine is that there is so little in the text about the pictures. . . . It seems to me that one notable line for improvement would be either to adapt the pictures to the text *or the text to the pictures.* Why not the latter?"

In these four sentences, Bell predicted, if he did not invent, the whole future development of the GEOGRAPHIC. With his brilliant gift for perceiving the obvious, he saw that the photograph could be turned into a narrative device that was, for journalistic purposes, more dramatic, more enticing, and more interesting than words.

Grosvenor was a writer by necessity (as a young man he sold articles to other publications as a means of supplementing his earnings in addition to writing or rewriting most of the contents of the GEOGRAPHIC), and in the early years he spoke of improving the GEOGRAPHIC almost exclusively in terms of creating a more readable text. Yet he steadily guided the magazine in the direction Bell indicated. This may well have been because Grosvenor had already perceived that if he wished to make something new, he must use what was new—photography. He had published 11 pages of

photographs of Lhasa, Tibet, from the Imperial Russian Geographical Society in the January 1905 issue, an editorial decision so unprecedented—and so expensive—that he expected to be fired for it. Instead readers stopped him in the street to congratulate him.

Grosvenor had printed the Lhasa pictures primarily to fill up empty pages, but when he saw the stir they created, he repeated the experiment, running 32 consecutive pages of photographs of the Philippines in April 1905.

No editor, as he often said, had ever before printed so many pictures (138) on one subject in a single issue, and he regarded this feature as a turning point in the life of the magazine.

Membership grew in 1905 from 3,400 to more than 11,000, and increased revenues permitted the Society to relieve Bell, after nearly six years, of the necessity of paying the first $1,200 of Grosvenor's annual salary out of his own pocket.

Thereafter Grosvenor was continually on the lookout for beautiful and unusual pictures, and by 1908 more than half the magazine's pages were devoted to photographs.

From an elephant hunt in Siam to icy Glacier Bay in Alaska, writer and photographer Eliza Ruhamah Scidmore reported on Asia and the North American frontier at the turn of the century. An associate editor, she became the first woman on the Society's Board of Managers, in 1892. To meet the new rage for color images, she exquisitely hand tinted her photographs of Japanese children taken about 1910. Though this one (facing page) was not published, others from the set illustrated her article "Young Japan," in July 1914, the issue containing GEOGRAPHIC's first color-film photograph—a Lumière Autochrome of a Belgium flower show.

ELIZA R. SCIDMORE (OPPOSITE); MARTIN LUTHER KING LIBRARY

IN A LETTER FROM KYOTO, JAPAN, in 1912 Eliza R. Scidmore, an adventurous writer and photographer who may have been the first American professional geographer of her sex and was certainly the first woman to be elected to the Society's Board of Managers, gently tweaked Grosvenor's nose over his enthusiasm for photographs.

"Herewith 31 pictures of [Japanese] 'Women and Children,' mostly children, as you see," Miss Scidmore wrote. "I have had them made uniform in size and strongly colored, so that you can cover yourself all over with glory with another number in color and thereby catch a few thousand more subscribers."

This was a reference to Grosvenor's triumph in printing, in the November 1910 issue, 24 pages of hand-tinted photographs of scenes in Korea and China. These were black-and-white photographs that had been colored by a Japanese artist according to the instructions of the photographer, William W. Chapin.

The response was so overwhelming that Grosvenor inserted a color feature in every subsequent November issue of the magazine. "November," he explained, "is the big renewal number."

When true color photography was being perfected, he crowded the magazine with images captured by each new process.

Some thought that he overdid it, or did it with too little method. In Grosvenor's time modern ideas of page design had scarcely been thought about. Although GEOGRAPHIC editors provided layouts to show the printer where the words and pictures should go, photographs often appeared in the middle of articles that bore no relation to them whatever.

"It is not against color that my soul rebels. It is against the artificial massing of color, the lily-painting," wrote bluff Maynard Owen Williams later. Williams, the far-ranging Chief of the Foreign Editorial Staff who contributed 70 articles and more than 2,200 photographs to the magazine, described himself as "a rough-neck and a camera-coolie."

Grosvenor pressed on. He had, wrote Frank Luther Mott in *A History of American Magazines,* "transformed the GEOGRAPHIC into a kind of periodical never before known."

Although it was clear very early that pictures were responsible for this success, Grosvenor continued to take pride in the progress of GEOGRAPHIC writing toward his goal of realistic reportage and simple, clear exposition, and with some reason.

Joseph F. Rock, the most famous and probably the most eccentric of the free-lance explorer-photographer-writers, distilled the style that made the GEOGRAPHIC into this paragraph:

"All was quiet and hushed, as I lay on my camp cot facing the tomb of the buddha whose room I occupied. Outside, the glacier stream roared, the thunder rolled, and Dordjelutru staged an electrical display in this weird canyon. I shivered. Here, all alone, in the presence of a sacred mummy in a hoary lamasery, I listened to the tempest breaking over the icy peak of Minya Konka. . . . Had time been set back a thousand years? Did I dream, or was it all reality?"

Rock and the others traveled by steamship across the oceans and by camel, mule, and litter across the land. Threatened by Chinese bandits, Rock and his coolies escaped with his trunks of cameras and film across a river on inflated goatskins. Correspondents sometimes vanished for a year or two at a time, returning with half a dozen stories and a motion picture.

Grosvenor did not restrict subject matter. "When I hear of a story that will interest our members," he said, "I do not ask if it is about geography." The excavation and mapping of the lost Inca city, Machu Picchu, by Hiram Bingham in 1912, was essentially archaeological—so much so that Grosvenor told Bingham at first that the work might not be "sufficiently geographic" to justify a grant of money. Bingham's findings, supported in part by a $10,000 Geographic grant, produced 186 pages of photographs, text, drawings, and maps for the April 1913 issue of the magazine. The lesson was a valuable one, and after that the Society covered every sort of expedition, flight, voyage, and excavation that promised to produce new knowledge—and good copy.

Honed by two decades of seeking "the last great geographical prize," Comdr. Robert E. Peary claimed victory at the North Pole on April 6, 1909. A staunch supporter, the Geographic contributed $1,000—an early research grant—to his final expedition and upheld Peary's navigational evidence when his discovery was challenged. In 1984 the magazine asked modern Arctic explorer Wally Herbert to evaluate Peary's record. He concluded in the September centennial issue that Peary may have missed the Pole by 30 to 60 miles.

ROBERT E. PEARY COLLECTION, NGS

GROSVENOR was keenly interested in what interested people. He studied other magazines for ideas, and at National Geographic lectures, which commonly attracted 3,000 people in the afternoon and another 3,000 in the evening, he watched both screen and audience to determine which pictures the people liked the most. He found that even well-brought-up young ladies preferred the dramatic ones and were not shocked by the most explicit material.

The result was a dazzling, and sometimes dizzying, array of stories about everything from backyard insects (Grosvenor's brother-in-law, David Fairchild, built a camera 12 feet long, making novel images of grasshoppers, flies, and ants many times larger than the creatures themselves) to royal tombs in Egypt to "The Acorn, a Possibly Neglected Source of Food" to the magnificently illustrated "Fifty Common Birds of Farm and Orchard."

Grosvenor let his writers describe things as they saw them, and

they sometimes expressed opinions that would make a modern editor blanch. ("From the sounds [that blind street musicians in China] produced on their strange, discordant instruments," wrote Chapin in 1910, "we thought it would be much to their own advantage to be deaf also.")

Grosvenor tried to turn his writers into photographers, providing them with the best cameras available and all the film they needed.

Some resisted. Grosvenor explained the principle to Maynard Owen Williams: "The illustration made the National Geographic Magazine and the magazine's life depends on getting better and better pictures. The professional writer always *patronizes* the photographer. All right, let him, but pay no attention to him, but go ahead and *get pictures.*"

He continually warned Franklin L. Fisher, the conscientious Chief of the Illustrations Division, against penny-pinching. "Please note that I do not care whether he gets $50 or $100 or $200 worth more photographic material than he can use," he wrote in regard to Rock, a profligate user of film. *"The point to insure is that he get material to work on."*

As Williams told Assistant Editor Jesse R. Hildebrand, "Nothing lies as badly as a photograph that is not up-to-date."

More and more, Grosvenor came to regard text stories as an opportunity for photography. Often he would buy a manuscript, file it away, and wait for years for the photographs that might make it publishable. "There was quite a store of articles to be pulled out in case the subjects became newsworthy," recalls Frederick G. (Ted) Vosburgh, a professional journalist who in 1967 became the only word man to be appointed Editor of the magazine. "That meant you had to update an article that had been lying in the files for maybe ten years.

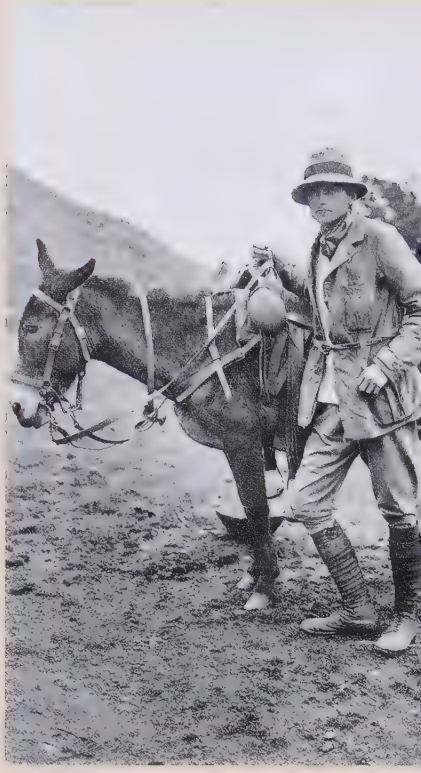
"Travel funds went mainly to the double threats, fellows like Maynard Owen Williams and that other great field man, Bob Moore, who could bring back the story in words and pictures," says Vosburgh. "Most of us had to write on our own time on subjects close to home to get stories into the magazine."

Grosvenor made himself into a first-rate photographer, and he was a student and teacher of the craft. Some of his pictures, particularly the luminously affectionate candid portraits that he made of his wife and children in the company of the Bells and other relations at their summer place at Baddeck, Nova Scotia, rank among the best ever taken by a GEOGRAPHIC photographer.

Grosvenor, the descendant of seven generations of New England gentry (the first Grosvenor to come to America was killed in 1691 by the blow of an Indian's tomahawk at Roxbury, Massachusetts), was a formal man who called his colleagues and most other people Mr. or Mrs. or Miss; the staff referred to him as "Chief."

There is a certain endearing stiffness to the many photographs of the solemn Grosvenor that were published in the magazine over the years, as if his affectionate wife had placed his aviator's cap on his head or propped him up against a redwood just before the photographer exposed the film.

Yet he was a gregarious man—he loved big ceremonial occasions



"Machu Picchu might prove to be the largest and most important ruin discovered in South America since the days of the Spanish conquest." Hiram Bingham confirmed his hunch a year after he hiked into the legendary Inca outpost in 1911. Backed in part by the Society's first archaeological research grant—$10,000—the Yale University history professor returned to the Andes leading the Peruvian expedition of 1912. Although the project was considered "archaeologic and not sufficiently geographic" at first, the results of Bingham's remarkable excavations in Peru filled the entire April 1913 issue and introduced the "lost city" to the world (following pages).

HARRY WARD FOOTE; HIRAM BINGHAM (FOLLOWING PAGES)

Among the first to make closeup photographs of wildlife in natural environments, George Shiras 3d pioneered techniques of night photography, which he shared in the GEOGRAPHIC *of July 1906. He often worked from a skiff's bow, there mounting a jacklight and two cameras of different focal lengths. Hand-holding a pan of magnesium flash powder, Shiras pursued his quarry "at a time when the hunter ordinarily is sound asleep."*

His 58-page article pleased readers but offended two Society board members who resigned, huffing that the Editor had turned "the magazine into a picture book."

GEORGE SHIRAS 3D

and was never so happy as on an outing with his wife and children—who seems to have understood the value of humor.

"Father never minded all the jokes about the GEOGRAPHIC," says his daughter Dr. Mabel Grosvenor, a pediatrician. "He said they made people sit up and think about the GEOGRAPHIC."

Grosvenor had a keen sense of public relations. Remembering a dinner that he had inveigled his second cousin, William Howard Taft, who became the 27th President and the tenth Chief Justice of the United States, into attending, he said, "Mr. Taft came, and we got a lot of publicity for the magazine we needed."

Other Presidents, including Calvin Coolidge, who had played handball with Grosvenor at Amherst, visited the Geographic, especially to award the Society's Hubbard Medal to such noted explorers as Richard E. Byrd and Charles A. Lindbergh.

OLKMAR K. WENTZEL, a member of the Foreign Editorial Staff, was reprimanded by the business office for spending $400 to buy a surplus army ambulance on assignment in India and emblazoning it with the American and Society flags and the legend *National Geographic Photo Survey of India.*

"I was so depressed I was ready to jump into the Ganges," Wentzel recalls. "However, a couple of days later I got a telegram from Dr. Grosvenor saying, 'Congratulations acquisition National Geographic Photo Survey Car.' He understood, you see."

When the *New Yorker* magazine ran a three-part profile of Grosvenor in 1943, some believed that the author, Geoffrey T. Hellman, had had a bit too much fun with the Chief's eccentricities, especially his passion for bird-watching and for inserting pictures of birds in the magazine at every opportunity. But Grosvenor liked

the portrait, admired Hellman's writing and reporting, and wrote *New Yorker* Editor Harold Ross a courtly letter of thanks for "the honor you have done me and the National Geographic Magazine."

A somewhat stunned Ross wrote back: "The National Geographic was my father's favorite magazine. . . . If he were alive, I'd show him your letter and impress him as I never was able to impress him during his lifetime."

Grosvenor's patrician manner probably encouraged the legend that the GEOGRAPHIC was a sort of gentlemen's club, but in fact Grosvenor often was one of the few certifiable gentlemen on the premises. He hired people for what he thought they could do for the magazine, not for their social or educational credentials.

Many belonged to that class of self-taught American go-getters that flourished in the 19th and early 20th centuries. Charles Martin, the inventive head of the photo lab, had been an Army enlisted man whom Dean Worcester, then a government official, had borrowed to make photographs for the article on the Philippines. Joseph Rock was the son of an Austrian manservant. John Oliver La Gorce, Grosvenor's right-hand man for half a century and the third Editor of the magazine, was a charming and gregarious person who made friends with some of the most famous people in the world, but he had only a high-school education.

Some were newspapermen or footloose youths who simply walked in off the street and captured Grosvenor's fancy. Luis Marden, a photographer, writer, and Renaissance man who discovered the wreck of the *Bounty* among many other feats and became one of the greatest stars in the history of the magazine, overheard another man on an elevator saying that the GEOGRAPHIC was looking for an unmarried man to work as a photographer. He applied for the job and, somewhat to his own surprise, got it.

The place became so militantly unpatrician, in fact, that Grosvenor felt that he must warn Franklin Fisher. "I wish you would rid yourself of your grudge against Boston Harvard men," he wrote in 1934. "Our job on the National Geographic Magazine is to get the best material, regardless of whether we like or dislike the speech or manners of the man who has it."

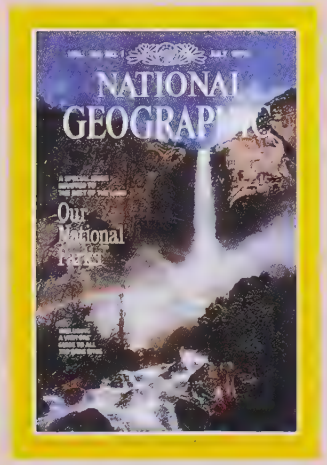
Grosvenor was proud of having been among the first employers in Washington to hire female secretaries and clerks and thought that they were far better than men at such work. His longtime Director of Personnel, Mabel Strider, is still remembered as one of the most powerful figures in the annals of the Society. It is clear from Grosvenor's correspondence with Eliza Scidmore and many others that he liked women and wrote to them in the same tone that he used to address male correspondents. In the 1930s and 1940s he urged his editors to find more female writers, noting in 1938 that many best-sellers of that year were written by women.

"I am sure there must be some hidden talent," he wrote to Hildebrand in 1949. "Men are more forward . . . perhaps that is one reason why the ladies . . . have not received as many assignments."

Yet he insisted that male and female employees eat in separate dining rooms. Exuberant Carolyn Bennett Patterson, who succeeded the crusty Mason (Monty) Sutherland to become Senior

With a lynx shot in a flash of blazing magnesium, Shiras bagged another trophy in Canada. One of his purposes in hunting by camera rather than gun was "to show that the time has come when it is not necessary to convert the wilderness into an untenanted and silent waste." In the process, he invented a whole new category of photographic record and art.

GEORGE SHIRAS 3D

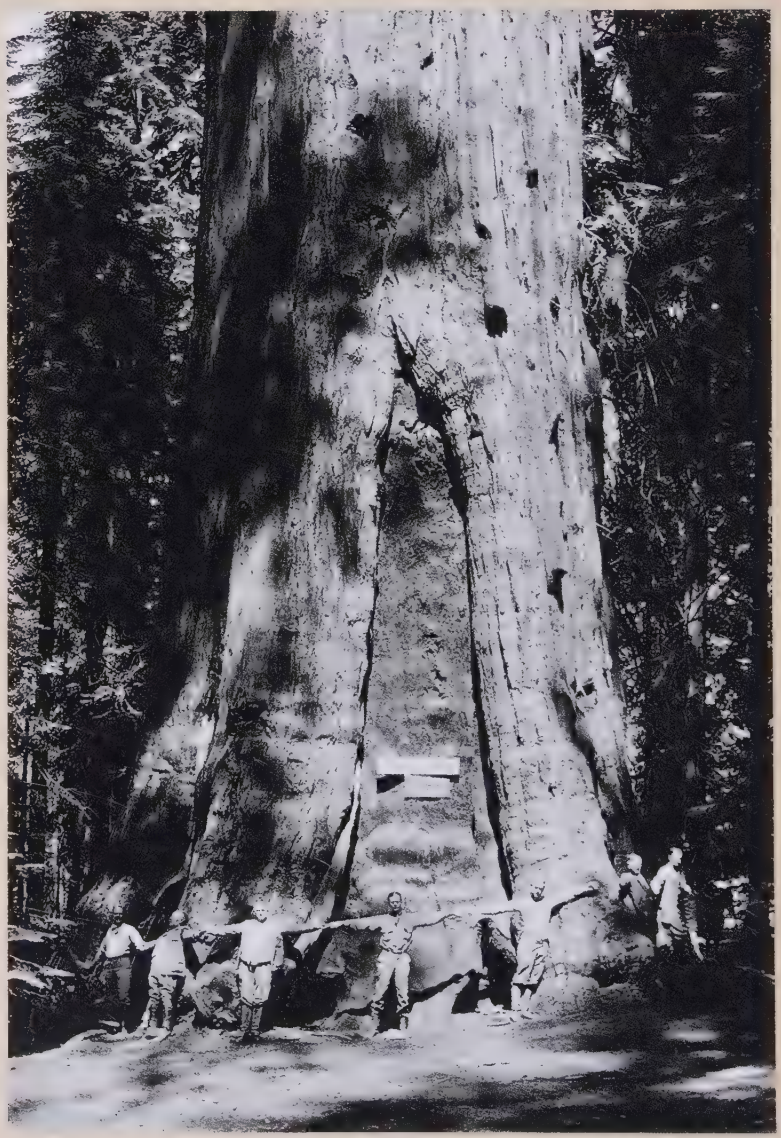


A desire to preserve nature's wonders has prompted the magazine many times to report on national parks—an entire issue was devoted to the glories of and threats to the system in July 1979 (above).

When logging threatened the existence of a grove of giant sequoias in California in 1915, Editor Gilbert H. Grosvenor joined a group of eminent Americans in a visit to the site. The photograph he took of 20 men joining hands to encircle the General Sherman Tree (right) dramatized the size of the huge conifers. Later the Society and its members donated $100,000 for additions to Sequoia National Park.

A 1973 article reviewed the life of John Muir and his role in the establishment of six national parks, including Yosemite. Muir (above right, at right) visited the park with fellow naturalist John Burroughs in 1909. Yosemite's Bridalveil Fall (facing page) charmed readers in 1916.

FRED PAYNE CLATWORTHY (ABOVE RIGHT); GILBERT H. GROSVENOR, NGS (RIGHT); FRANKLIN PRICE KNOTT (FAR RIGHT)



National Geographic Society U.S.A.

Assistant Editor in charge of the caption writers, recalls that she was scolded by Miss Strider for "walking too fast down the hall."

The practice of printing photographs of women in what a GEOGRAPHIC caption writer described as "true native dress" may seem questionable. While it can hardly be denied that these pictures played a role in the dramatic growth of membership, Grosvenor regarded the decision to publish them as a victory over prudery.

"That sort of picture at that time was quite novel—why, people were afraid to print anything showing a woman's breasts," he told Allan Fisher. Then, breaking off to examine an illustration dating from 1910, he exclaimed, "There you see a suckling child [and its mother]. They're beautiful!"

ON THE OTHER HAND he instructed his first Director of Advertising, John Oliver La Gorce, never to accept advertisements for alcohol, tobacco, or patent medicines. Grosvenor reported in his article on Russia in 1914 that the tsar's wartime ban on vodka had proved so popular with the people that they wished their sovereign to make prohibition permanent.

Grosvenor was overjoyed in his earliest days when someone overheard two workingmen discussing the GEOGRAPHIC. Those were the readers he wanted in their millions.

"Please remember always to make your text as simple and natural as you can—so simple that a child of ten can understand it," he wrote to Williams, a former missionary who sometimes wrote like an ecstatic preacher.

Grosvenor could be brusque with a subordinate who displeased him or who strayed from the principles of accuracy, fairness, and high-quality production that he had laid down. After detecting an error in a story about Chicago, he blistered long-suffering, and in this case quite innocent, Assistant Editor William Joseph Showalter: "The cornerstone of the success of the National Geographic is fidelity to truth; once lose our reputation for accuracy, and the GEOGRAPHIC is doomed." At the bottom of this memo he scrawled, "Please do not talk to me about this matter."

Yet when Luis Marden, then a junior member of the staff, was married, Grosvenor heard about the event and sent him a two-volume bird guide and a touching note of congratulations. "Now that you are married," he wrote, "you will realize what unfortunate people bachelors are."

In 1926 Grosvenor sent this terse memorandum to Assistant Editor Ralph Graves: "Never accept anything from Magoffin. His ways are not our ways." What exactly the ways of Magoffin might have been and why they alienated Grosvenor are not recorded in the files.

Gradually the staff and Gilbert Grosvenor grew old together. Joseph Rock, the friend of the King of Muli (who dined in the same room with the gilded mummy of his royal uncle, and whose body wastes were "molded into pills, gilded, and dispensed among the peasants to prevent illness"), continued to send back his marvelous photographs and his long, convoluted manuscripts from the remotest parts of Asia. In 1948, after 29 years of service, Maynard Owen

Mobile vantage point, the vehicle of writer-photographer Volkmar Wentzel allows him a view of the crowd at the city gates of Bundi in southeastern Rajasthan. For his pictorial survey of India in the late 1940s, Wentzel outfitted a former U.S. Army ambulance bought at an Indian salvage yard after promising membership in the Society to the officer in charge. Improvisation has long marked field coverage by GEOGRAPHIC photographers and writers.

VOLKMAR WENTZEL, NGS

A legend among colleagues and readers alike during his 42 years on the staff, Luis Marden explored the remote and romantic, including the Maya city of Chichén Itzá in 1936. A pioneer underwater photographer and discoverer of the remains of **Bounty** *off Pitcairn Island in the Pacific, Marden has contributed as a free lance since retiring in 1976.*

LUIS MARDEN, NGS

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Prologue to adventure found Associate Editor (later Editor) John Oliver La Gorce, at far left, displaying the Society's flag prior to the 1930 commencement of a survey by seaplane of the east coast of South America. To La Gorce's left stood staff photographer Jacob Gayer and Assistant Editor Frederick Simpich, the most prolific writer in the magazine's history. Altitude-champion parachutist and aerial photographer Capt. Albert W. Stevens posed below Simpich, whose article on the expedition was published in January 1931.

RICHARD H. STEWART, NGS

PREVIOUS PAGES:
On the plains of Gaba in southern China an expedition led by Joseph F. Rock in 1928 pauses in a valley near Lijiang in Yunnan. Outlaw escorts granted safe passage to the adventuresome journalist on this four-month journey to Gongga Shan at the request of their king, who had seen the magazine showing Rock's travels in Tibet. On rugged expeditions early explorers such as Rock produced glimpses of far-flung corners of the world rarely, if ever, seen by outsiders.

JOSEPH F. ROCK

Williams wrote to Grosvenor: "Never grieve for me if it is my good fortune to die with my boots on. That's what I most hope for."

The magazine settled into a long afternoon, repeating the successes of an earlier day, living by methods of an earlier time. After decades on the job, Grosvenor's staff knew, perhaps too well, what the Chief wanted, and they kept giving it to him.

In the late 1930s the guard began to change. Andrew H. Brown, a fluent young writer who greatly pleased Grosvenor with the popularity of his articles, was hired in 1936. After World War II Beverley Bowie, a former intelligence officer and Harvard man, introduced a note of poetry into the text before dying young of cancer in 1958. The double-threat man-and-wife team of Franc and Jean Shor invested stories with an atmosphere of breezy sophistication.

George W. Long, the only GEOGRAPHIC staffer ever to lose his life in the line of duty (his aircraft vanished over the Atlantic in 1958), and a skillful editor named Robert Conly began handling the copy of the veterans. John Scofield, a future Associate Editor, joined the staff in 1953, after his free-lance articles impressed Ted Vosburgh.

New men, such as forthright Baltimore newsman Nat Kenney, sometimes found older ones out-of-date and chafed under a system that kept editorial experimentation to a minimum.

"Nothing I can do in the name of God, grammar, or friendship will prevail upon Williams to write a simple declarative sentence," wrote Hildebrand to Grosvenor. "I am going home," Williams retorted in a countermemo. "(Declarative sentence.)"

GILBERT HOVEY GROSVENOR remained on the job for 55 years, and when he retired in 1954 at the age of 78, the Society's membership exceeded two million. He had outlived 65 of the 88 persons who had served on the board during his tenure.

In his letter of resignation as Editor, Grosvenor referred to "the presence of a strong son beside me" that he had enjoyed for 30 years, but he recommended John Oliver La Gorce as his successor.

The son, Melville Bell Grosvenor, who had been waiting quietly for his opportunity since 1924, became Associate Editor and Vice President. Melville, born in 1901, was the first of Gilbert and Elsie Grosvenor's two sons and five daughters and is remembered by nearly everyone who ever knew him for his joyful nature, his goodhearted impulsiveness, and his love of life.

"He had the enthusiasm of several 12-year-olds," recalls Melvin Payne. "I don't often use this word, but there was a certain sweetness about Melville. It was unusual in a man as big and strong as he was. But it was there."

Apparently it was there from the beginning. "You never saw such a fascinating baby," wrote Melville's Grandmother Bell in 1902. "I don't know how I live without him from day to day."

Melville and Grandfather Bell were all but inseparable. "My first conscious memory was sitting on the lap of a jolly man with a snow-white Santa Claus beard and sparkling black eyes," Melville wrote after he grew up. "[He'd say,] 'Pull my nose, Melville.' I'd reach up and tweak his nose and he'd go 'bow-wow-wow. . . .' 'Now my beard.' Then he'd bellow an awful growl."

Melville rode on the back of Bell's beautiful coach horse, Champ (and later learned to ride standing up on the back of a galloping horse of his own), did his homework in his grandfather's study while the inventor did his own work, made a toy steamboat with an egg and a candle under the old gentleman's direction, went to the movies with him—and stopped on the way home at the bakeshop at Wisconsin Avenue and P Street for apple pie. Sweets were forbidden to Bell, a diabetic, and he would warn, "Don't you say a word to your grandmother."

Grandfather and grandson spent a whole winter planning a Robinson Crusoe experiment in Nova Scotia, and when summer came, roughed it together in Bell's beached houseboat in an uninhabited cove of Bras d'Or Lake with the idea of living off berries and roots. "They lasted about a day," Dr. Mabel Grosvenor recalls.

"My brother Mel was very like my Grandfather Bell," says Dr. Mabel. "I don't know whether he inherited it or not, but he had the same enthusiasm and curiosity. They were very, very much alike. Mel was much more like Grampy than like Father."

Melville graduated from the United States Naval Academy in 1923. He resigned his commission and joined the staff of NATIONAL GEOGRAPHIC the following year, beginning a wait for leadership that, in its length and in the patience of the heir apparent, rivaled that of Queen Victoria's son, Edward VII, who was 59 when he became King of Great Britain and Ireland. Melville was almost 56 when at last he was appointed Editor and President in January 1957. He had risen through the ranks, performing nearly every job on the masthead dealing with words and pictures.

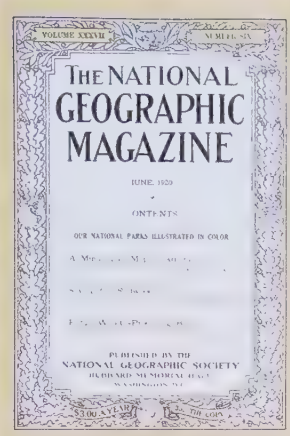
He was a fine picture editor and an excellent judge of text, even though he was a miserable speller (his father advised him to write faster and look up troublesome words in a 50-cent dictionary afterward). He was such an impatient reader that Senior Assistant Editor Bart McDowell, who ghosted many of the articles that Melville signed, once suggested that manuscripts should be lopped off at the point where the Editor stopped reading, since his attention span was perfectly calibrated to that of the average reader.

THE MAGAZINE'S distinctive first-person style has been an uncomfortable one for many writers. When Melville's son Gilbert M. Grosvenor and Allan Fisher proposed a poll of the members to see if they would accept a change, Melville told them to go ahead, but predicted that 80 percent would want GEOGRAPHIC writers to continue using "I" and "me."

"He was off by 2 percentage points," says Fisher. "Eighty-two percent of those polled favored keeping the old familiar first person." But Melville's greatest quality, by common consent, was his talent for leadership. He recognized good people when he found them, and when he found them, he hired them.

Few remember him by any but his given name, and few would differ with Senior Assistant Editor Howard E. Paine, who says, six years after his old chief's death and 21 years after his retirement as Editor, "I miss Melville every day."

Like his Grandfather Bell, Melville retained the boundless


VOLUME XXXVII NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

JUNE, 1920

CONTENTS

OUR NATIONAL PARKS ILLUSTRATED IN COLOR

PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY

JUNE 1920

The quintessential field man, and one of the first photojournalists, Maynard Owen Williams joined the magazine in 1919. In 1945 he awaited an audience with the King of Saudi Arabia, who had provided him with headdress and robe. But Williams reported that while trying to photograph the king:

"My head shawl got in the way of my sweaty glasses, and I tramped on the corner of my robe. My gold-wound crown slipped over my eyes at a bacchanalian angle. Even my Contax slumped forward on its tiny tripod in an unscheduled curtsy.

"Was this impromptu comedy a howling success? Far from it."

MAYNARD OWEN WILLIAMS, NGS

curiosity of boyhood well into old age. "Oh, boy, this is going to be wonderful!" he would cry, setting out for a sail on Bras d'Or Lake, waters he had navigated thousands of times before. Once under way he would be captain, guide, storyteller, and chief cook all in one, making pancakes in the shape of letters of the alphabet to match the names of any youngsters who happened to be aboard. His style as Editor was not so very different.

This miraculous capacity to be interested in everything brought him through his long apprenticeship with his spirits not only intact but also glowing in anticipation of the fun that lay before him. Although it is likely that Melville's gift for enthusiasm was a factor in the length of that apprenticeship, his father was pleased by the results his son achieved as Editor.

"Melville realizes, as I have tried to, that as the years pass, a different . . . method of expression is necessary," Gilbert Grosvenor said, five years after the changeover.

Even before he took the helm, Melville was working toward methods that would break down the orthodoxy that had settled onto the magazine as the staff grew older and more set in its ways. There had been signs of rigidity for many years. When Maynard Owen Williams tried out a Rolleiflex camera in the 1930s, he was told to "junk it" because the pictures he sent back were square, whereas only rectangular pictures, vertical or horizontal, were permitted in NATIONAL GEOGRAPHIC layouts.

Although the Rolleiflex eventually became standard equipment, a prejudice against candid cameras ran deep and lasted long. Even after the smaller cameras were adopted, they were often used to make the same static pictures produced by older cameras mounted on tripods. By the time Melville took over in 1957, of course, the magazine was half-filled with the slightly overbright, nervous hues of Kodachrome, a film that made it possible, in conjunction with new cameras and lenses, to photograph fast-moving objects in color and to make enlargements of any size that would be absolutely faithful to the colors of the tiny original.

THE FLEXIBILITY and artistic license that this new technology bestowed on photographers and picture editors opened up the possibility of a magazine as new, in its way, as the one that Melville's father had created.

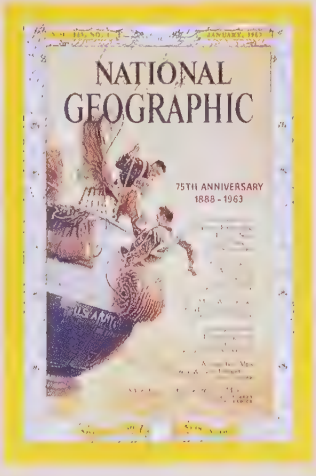
New technology made possible an expansion, both in circulation and in the horizons of coverage, that the elder Grosvenor could only dream about—although La Gorce had foreseen the need for new printing methods if the magazine was to grow. By the early 1960s Melville had, with the support of Thomas W. McKnew, Executive Vice President, moved the printing of the magazine to Chicago, where the high-speed presses of R. R. Donnelley & Sons made it possible not only to print many times the 2.3 million copies that could be produced on the old presses in Washington but also to print every illustration in color.

Melville wanted a staff that would understand this opportunity and one with the talent and daring to take advantage of it. Even before La Gorce retired, he started hiring. In this, as in everything

Bound for the stratosphere, **Explorer II** *prepares to lift off on November 11, 1935. The historic flight, sponsored by the Geographic and the U.S. Army Air Corps, reached a record altitude of 13.71 miles. On board were Capts. Orvil A. Anderson and Albert W. Stevens. A year earlier Stevens had needed assistance to escape the plummeting gondola of* **Explorer I** *(below).*

Air collected during the 1935 flight was presented for testing and chemical comparison 53 years later. Accepting (above, at center) was Joseph O. Fletcher of the National Oceanic and Atmospheric Administration. Presenting were two Chairman Emeritus of the Society, Thomas W. McKnew, left, and Melvin M. Payne. Both had actively assisted in the balloon project.

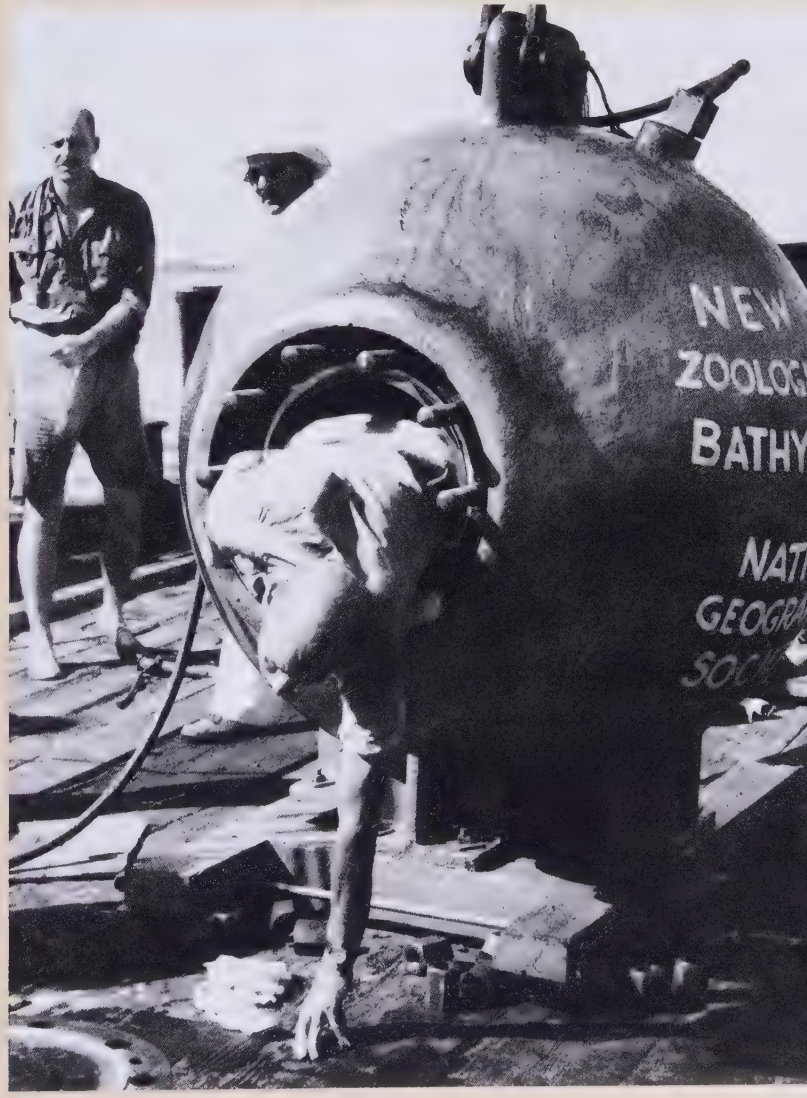
MAJ. H. LEE WELL, JR. (OPPOSITE); BILL BALLENBERG



JANUARY 1963

Probing the deep for more than five decades, Capt. Jacques-Yves Cousteau (left) has added immeasurably to man's knowledge of the oceans and life in the sea, often in partnership with the Geographic. Co-inventor of the Aqua-Lung, he also developed experimental undersea human habitats. In 1963 one such project off the coast of Sudan, dubbed Conshelf Two, included a domed "garage" (far left) to house yet another Cousteau first—the diving saucer.

Supporting ocean exploration has long been a hallmark of the Society. One particularly notable undertaking was the 1934 record-breaking 3,028-foot descent—and safe return—of the bathysphere (below) manned by William Beebe.



ROBERT B. GOODMAN (LEFT); BATES LITTLEHALES, NGS (TOP); DAVID KNUDSEN

else, he acted decisively on instinct, offering jobs to virtual strangers on the basis of brief interviews. Behind his seeming impulsiveness lay a clear purpose and a firm plan.

Senior Assistant Editor Mary Griswold Smith, one of the first new people brought aboard by Melville, was hired as a picture editor in June 1956. She was 21 years old. "I had very little education, and my only qualifications were that Melville had been introduced to my father and I was crazy about photographs," Mrs. Smith says. "Melville hired me on the spot. He said, 'I'm going to be Editor and I need young people around me.' "

Earlier he had hired an erudite young Columbia University graduate, editor, and former U.S. Army bandleader named Merle Severy, and not long afterward told him to create a new division to publish National Geographic books. Howard Paine, who had been working in an advertising agency in Springfield, Massachusetts, was employed to help Severy with layout and design.

Ted Vosburgh, Melville's Associate Editor, describes Paine as "that art director with the incredibly fertile mind who helped Melville steal the acorns."

Paine, who says that Melville put him "in charge of white space," introduced the principles, possibly even the idea, of modern design to the GEOGRAPHIC, a process that included the gradual elimination, over a period of years, of acorns and oak leaves that framed the famous yellow border of the magazine.

In the spring of 1954 Gilbert Grosvenor had visited the University of Missouri School of Journalism to accept an award for Distinguished Service in Journalism. It proved to be a fateful conjunction. There he met a talkative 24-year-old Navy veteran and Missouri senior, Wilbur E. (Bill) Garrett. He, too, was crazy about photographs and possessed stores of enthusiasm, curiosity, and impulsiveness that may have reminded Grosvenor of his own son. In a memorandum he instructed Melville to hire Garrett. When, 26 years later, Garrett became the seventh Editor of NATIONAL GEOGRAPHIC, Melville presented him with the memo.

Many guessed from the first that the hardworking, outspoken Garrett would end up in the Editor's chair. "Bill was insufferable in those days, but his talent was obvious to everyone," says Mary Smith. "We thought it was black magic." Howard Paine remembers going with Garrett to the Naval Observatory in Washington at 5 a.m. with the idea of photographing Sputnik, the Soviet satellite that was the first man-made object orbiting in space. "Sputnik went right through the bowl of the Big Dipper and Garrett went 'click' and made what may have been the first photograph of Sputnik in orbit," Paine says. "Bill always said that the secret of photography was '*f*/8 and *be* there.' But the luck that guy has!"

At about the same time La Gorce, who had also hired Melville, hired Gilbert Melville Grosvenor, just out of Yale University. He had been a premedical student with no particular thought of a career at the GEOGRAPHIC before being captivated by the camera during a vacation. Gil Grosvenor, son of Melville and grandson of the original Gilbert Grosvenor, was to rise through the masthead like his father and become Editor, President, and Board Chairman.

Elegantly attired, Editor Melville Bell Grosvenor, right, and his wife, Anne, attended the 1967 coronation of the King of Tonga with writer and photographer Luis Marden. In parkas, wet suits, or top hats and tails, GEOGRAPHIC representatives dress to fit the assignment. Grosvenor continued a tradition of widely traveled editors, at home in the field as well as behind a desk.

EDWIN STUART GROSVENOR

WITHIN TWO YEARS after taking control, Melville had hired the nucleus of the staff that would carry the magazine into the 21st century. In 1964 he moved them out of the dim and crowded precincts of the old headquarters into a light-filled modern building next door.

Foremost among the newcomers—many of whom were recommended by Garrett—was a critical mass of graduates of the University of Missouri School of Journalism, including Robert L. Breeden, now Senior Vice President in charge of Educational Services of the Society, and Associate Editor Thomas R. Smith. In 1959 Minnesotan Thomas J. Abercrombie, whose realistic photographic style marked a turning point in the way the magazine made and selected pictures, became the first of 12 GEOGRAPHIC photographers to be named Magazine Photographer of the Year. Garrett was the fourth, in 1969.

Most of the others were hired by James M. Godbold or Robert E. Gilka, who came to the magazine from midwestern newspapers in 1958. Melville made Godbold the first Director of Photography in 1959, thereby placing the work and well-being of photographers, a breed subject to uncommon stress, in the hands of a single strong executive. This was a momentous departure, and it was the key element in the creation by Godbold, and especially by Gilka, of a corps of photographers and a body of photography unique to the magazine.

Gilka, who succeeded Godbold in 1963, was on the job for 22 years, earning an unusual degree of affection and respect. His methods were much like Melville's. Says Assistant Vice President Carl M. Shrader, who served under Gilka as head of the photo lab, "Bob Gilka never told me what I could *not* do."

In writing, Melville wanted a more journalistic approach, one that would let the people in GEOGRAPHIC stories speak to members of the Society in their own voices. Precise, level-headed Ted Vosburgh acted as a moderating force in this and other enterprises. In Garrett's words, "Ted was the man who held onto the tether of Melville's magnificent airship."

One after the other, Melville hired a stable of new writers who had been seasoned by experience in the world of commercial newsgathering, including Senior Assistant Editor William Graves, a son of Ralph Graves, and several members of the staff of an expiring Washington news magazine called *Town Journal.* These included Bowie, Conly, McDowell, Edward J. Linehan (later the Articles Editor), and a raucous ex-Marine from New Jersey named Howard La Fay, who looked liked one of the Medici, talked like a taxi driver, and wrote like an angel.

In 1965 Joseph Judge, then a civil servant looking for greener pastures but who had been with *Life* magazine and a Washington television station, was asked by Allan Fisher and James Cerruti, the tough-minded editor in charge of free-lance writers, to write a small piece on Monticello to see what he could do.

The magazine bought the article and offered Judge a job. His father had been a star first baseman for the old Washington Senators. "Joe," Melville said to him, "you're going to be as good for

Clamoring to have their picture taken, children of Quemoy in 1959 swarm around Wilbur E. Garrett—photographer and illustrations editor who was named Editor of the magazine in 1980. Joining him to cover this Nationalist Chinese stronghold, shelled by mainland Communist Chinese forces in the late 1950s, was Senior Assistant Editor Franc Shor—who greeted youngsters in Chinese. During his 21 years on the staff, Shor circled the globe many times.

FRANC SHOR (ABOVE); WILBUR E. GARRETT, BOTH NGS

Turning over the helm after ten years as Editor and Society President, Melville Bell Grosvenor, second from right, consults with new Editor Frederick G. Vosburgh at a 1967 meeting in the Control Center. Associate Editor Gilbert M. Grosvenor, standing, created the center to keep track of articles from inception to publication.

The senior Grosvenor, who served the Society for 58 years, expanded grants to research and exploration, created the book divisions, inaugurated TV specials, and introduced the first all-color magazines. "Our quintessential reader. He had perfect pitch so far as what the reader wanted," an associate recalls.

JAMES L. STANFIELD, NGS

this magazine as your father was for the Senators. I used to sneak out of work to watch him play. I think my aunt 'died' ten times the year they won the pennant!"

Judge became one of the aces of the staff and, upon the premature death of Franc Shor, followed La Gorce, Vosburgh, and Scofield into the second highest post on the magazine.

"Melville transformed the Geographic from a Victorian to a 20th-century organization," says Tom Smith. Like most others of his generation who worked with Melville, Smith remembers the experience as the happiest and most fulfilling of his life. "He was like a father to us—a wonderfully unorthodox father, and that was very stimulating to young people," Smith says. "When you'd done something he liked, he'd put that big paw of a hand on your shoulder, and with a huge smile he'd let you know that he liked you and liked your work. You treasured those moments."

Assistant Editor Peter White remembers returning from Laos to find that deep changes had been made in one of his stories. He stormed into the Editor's office, so upset over the violence that had been done to his prose that he actually shouted at Melville.

"Peter, you're not well!" Melville cried in shocked tones. "You have worms. Somebody else came back from a trip and talked to me like this, and *he* had worms." After calling Garrett into the room to calm White, who by now was misty-eyed with loyal affection, Melville picked up the telephone and dialed a number. "I'm

going to send you over to my own doctor right this minute!" he said.

Severy and Paine took the dummy of a 436-page book about ships to the Editor's home on a Saturday morning, expecting to spend about an hour going over the material. "We stayed for lunch, dinner, and many mint juleps—somebody had sent Melville 23 kinds of mint," Paine recalls. "When he saw the dummy, it was 'Wow! The ship book! I've been waiting for this!' So we crawled around on the floor of Melville's study until ten that night, changing the layout around. Time flew."

Predictably, this sort of management released creativity. The whole aspect of the magazine changed; the staff felt itself involved as members of a family. It was impossible to lose interest because the head of the family insisted on living in an atmosphere of new ideas and boundless optimism.

OLD CONSTRICTIONS fell away. Gone were the acorns, the rigid rules about the size of pictures and the way in which pictures might be trimmed, cropped, and laid out on the page. Photographers, exposing thousands of frames of Kodachrome in order to capture the one instant in the life of an image that would speak directly to the reader, achieved pictures the like of which had never before been seen.

Writers roamed the world as freely as photographers in search of equally telling words. The magazine was, as it had been in Gilbert Grosvenor's heyday, wholly at ease with its times. By the time Melville Grosvenor retired as President and Editor in 1967, membership had more than doubled, to 5.6 million.

Melville Bell Grosvenor was Editor of NATIONAL GEOGRAPHIC for only ten years. In that time he built the new headquarters building in downtown Washington and an even larger building in Gaithersburg, Maryland, to house membership services, started Book Service, instituted National Geographic Television Specials, issued the first Geographic atlases and the first globes, modernized the printing of the magazine, opened a new Explorers Hall, greatly expanded the research activities of the Society, and left many other monuments to his time at the head of the Society's affairs.

In a sense, because the young people he chose and inspired more than 30 years ago are now producing the magazine he re-created, Melville is still the spiritual Editor of NATIONAL GEOGRAPHIC, just as Alexander Graham Bell remains its inventor and Gilbert Hovey Grosvenor its architect.

Their GEOGRAPHIC was born out of change, and it has continually reinvented itself in order to keep up with the changing world that is its inexhaustible subject matter. Yet at the end of its first century the magazine remains unmistakably its original self, constant to the principle of accuracy, fairness, optimism, and experimentation on which it was founded.

It is, in short, a monument to the three singular men who made it—and to their truly revolutionary idea that this journal belongs to the millions who read it, not as mere subscribers, but as members of an unending expedition to explore the earth and everything that exists upon it and beyond it.

Viewing the ruins of Angkor Wat, Melville Grosvenor keeps camera at hand in this 1959 photograph in Cambodia. He learned photography at the knee of his father, Gilbert H. Grosvenor. Following his death, the elder Grosvenor was eulogized in the October 1966 issue. Shown bird-watching (below), he spent a lifetime enthralled with every aspect of geography.

W. ROBERT MOORE, NGS

Keeping pace gracefully, Society headquarters in Washington, D.C., has grown from two-story Hubbard Hall (above, far left) to include the tiered building dedicated in 1984. Explorers Hall draws some 350,000 visitors annually to Edward Durell Stone's marble landmark, right. At groundbreaking in 1961 Melville Bell Grosvenor manned a power shovel, while then Chief Justice of the U.S. and Society trustee Earl Warren, standing, at left, consulted with the architect.

The Membership Center's tranquil setting (left) near Gaithersburg, Maryland, belies the busy pace within: Here 400 million pieces of mail are processed each year.

SISSE BRIMBERG (ABOVE); JAMES STANFIELD, NGS (LEFT); J. BAYLOR ROBERTS, NGS

Taking Up the Great Global Issues

The magazine in the past two decades

By JOSEPH JUDGE SENIOR ASSOCIATE EDITOR

ARRAYED ON YOUR BOOKSHELF, our magazines seem immutable, impervious to change. The newest number takes its place smartly like a recruit joining the ranks of a renowned and ancient regiment. This is illusion; within its yellow uniform the magazine has changed continuously over the past two decades. From 1970 changes were worked on it by the very act of reporting on a world that was passing through profound social, economic, and political disturbances. Those were the years of Vietnam, of oil price hikes, of terrorism; of acid rain, Chernobyl, and population explosion; of brushfire wars, starvation in the Sahel, and AIDS; and of the continuing collapse of order in what had been the old colonial world.

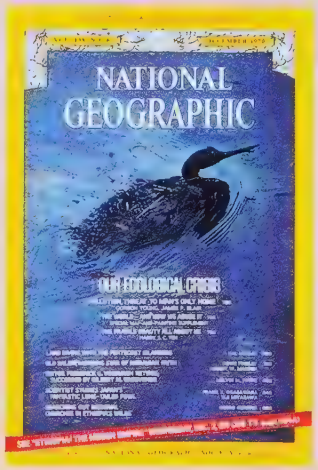
It was an era of a global economy turned upside down, of power risen from the dust and ashes of Japan and Germany. People in developed nations were asking if the price of progress must be fouled water, impure air, and poisoned land—while those in the poor nations were asking for the chance to have such problems.

Had the GEOGRAPHIC been guided in that turbulent period by the same codes of journalism that had prevailed in earlier years, it would simply have become irrelevant. But under Editors Gilbert M. Grosvenor and Wilbur E. Garrett the magazine took up, in its own distinctive way, the great global issues. It met the tests of relevance, and it flourished.

In many ways the last magazine to appear under Frederick G. (Ted) Vosburgh, a landmark number dealing with the threat of world pollution, was also the first for Gil Grosvenor, since it epitomized one of the enduring interests of his editorship. Gil and the editorial staff who had assembled that issue under Ted helped to set precedents that would mark the next decade as one in which the realities of the world were looked at straight on.

Those realities were marked by the United States' embittered departure from Vietnam and the continuing agony in Asia. They included a seemingly endless Cold War playing out its hot conflicts in Africa and Afghanistan, and a Central America festering from old inequalities of wealth and power. We could not pretend that such a world did not exist, nor could we go at it in the same old way. No longer could the man or woman from the GEOGRAPHIC arrive with 18 Halliburton cases and be greeted more as a celebrity than as a journalist. It was to be the era of the anonymous suitcase, the duffel bag, and the low profile.

Environmental degradation, stewardship of natural resources, the dilemmas of the oil economy and nuclear energy—facing hard issues became a hallmark of the editorship of Gilbert M. Grosvenor, announced in the December 1970 GEOGRAPHIC. After a decade Grosvenor succeeded Robert E. Doyle as President of the Society.



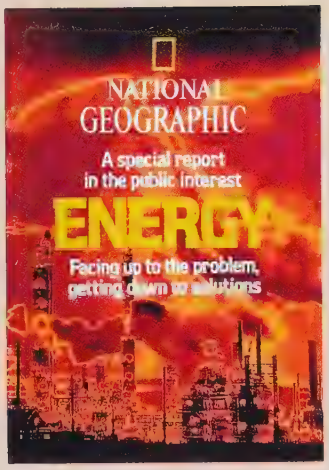
Wilbur E. Garrett was named Editor, a Geographic veteran with firsthand knowledge of the world's hot spots as symbolized by his 1973 photograph of Hmong women in Laos. For years Hmong fought in the war in Southeast Asia for the U.S. Later many emigrated to the United States; others got no farther than a refugee camp.

A constant evolution keeping pace with a constantly changing world has been the story of two decades under two Editors.

WILBUR E. GARRETT, NGS

One of the traditions of the magazine had been a straightforward approach to geographic places. We had often covered cities, states, and countries—*Here's Belgium!*—on the basis of internal inventory rather than on any notion of contemporary interest. To break from that pattern, Gil made new use of an old instrument, a planning council of senior editors; they began to select places for coverage that had a direct bearing on world events or peoples' lives.

ASH MARKS ON THE SOULS of staff writers from this period depict the trend: La Fay in Uganda, Syria, Leningrad; Ellis in Bangladesh, Cairo, Istanbul, Japan; Jordan in Sri Lanka, Somalia, Turkey; White in South Korea, Poland, Tanzania, Calcutta, Quebec. Jim Cerruti, a gruff but brilliant editor, set about bringing talented free-lance writers to the magazine—names like John McPhee, Charles McCarry, Douglas Chadwick, Peter Benchley, Tom Wolfe, Robert Laxalt, Paul Theroux, François Leydet, and Griffin Smith.



Triggered by revolution in Iran, a gasoline shortage in 1979 spurred the magazine to take a hard look at our nation's spendthrift ways with nonrenewable energy resources. The result was a special 13th issue, published in February 1981. The social and environmental costs of industrialization are now common themes as the Society promotes geographic knowledge in an increasingly interdependent world.

Essential to the GEOGRAPHIC's enduring popularity was the universally admired quality of its photography. Yet it too was undergoing a metamorphosis. Under the direction of Robert Gilka, the young photographic staff brought back images that went to the heart of the new realism typifying the magazine's direction. Jim Stanfield, Jim Blair, Bruce Dale, Gordon Gahan, Dave Harvey, Emory Kristof, Win Parks, Steve Raymer, Jodi Cobb, and others. They and outstanding free-lancers such as David Doubilet, Cary Wolinsky, Jonathan Blair, Bill Allard, Steve McCurry, Sam Abell, Jim Brandenburg were able not only to produce the traditional coverage of people and places but also to do so in sudden and illuminating moments that could make you catch your breath and seemed to look into the heart of things. Coverage was becoming reportage.

The test of reportage was Content with a capital C—that combination of lucid text, distinctive cartography, informative and elegant art, and brilliant photography splendidly printed; each facet complementing and supplementing the others. In a world given to special pleading and contentious haggling, the whole was verified—double- and triple-checked by a research staff second to none.

This was the new GEOGRAPHIC. Not only the moment recorded by the daily press but also the other moments, ones that mattered—thousands of wistful, sad, angry, anxious, hopeful, triumphant moments in human lives that unfolded and gave readers in millions of homes around the world insight into their times and far places.

The deployment of such gifted photographic and writing talent was not haphazard. For instance, the magazine examined American public policy in regard to its natural resources in a series that covered the wilderness system (1974), wild and scenic rivers (1977), national wildlife refuges (1979), national parks (1979)—a series completed in 1982 with the national forests. We had not forgotten the beauty and soul-renewing powers of our natural heritage, forever relevant but not forever unless we looked to its preservation.

This was the age of the supertanker superspill and other environmental crises. The oil embargo had pushed Americans to some hard choices. On the North Slope of Alaska, for example, the

Glowing streams of molten waste spill from train-borne ladles onto a slag heap, the dumping ground for a smelter at the Canadian mining town of Copper Cliff, near Sudbury. This area of Ontario supplies much of the free world's nickel and is an important source of copper.

Mankind the producer is also mankind the disposer, a theme addressed in articles covering such topics as radioactive and other hazardous wastes, acid rain, trash, pesticides, oil spills, and air and water pollution.

WINFIELD PARKS, NGS

bottom line seemed to be oil now, tundra later. But the range of our concern was wide—from the Everglades and the Serengeti, to Yellowstone and our salt marshes, from the Great Lakes and the Cooper's hawk, to Big Cypress and the world's whales, from the wolf and the Grand Canyon to the last of the tallgrass prairie. It seemed we led articles on such subjects with a question—can we save it?

THE CONSERVATION MOVEMENT was coming to maturity with the consent of the American people, and legislation was moving forward to protect our air and water and to better manage the parks and forests and wilderness areas. Inevitably a few articles stand out from an effort like this and speak for all others. I think of Tom Canby's and Steve Raymer's "Can the World Feed Its People?" and Allen Boraiko's and Fred Ward's "The Pesticide Dilemma." The magazine was confronting issues crucial to society's progress in a world of growing want, land abuse, and poisoning of the earth in the name of abundance. This brought us to confrontation with powerful lobbies that pleaded expediency on the environment in the name of employment and profit.

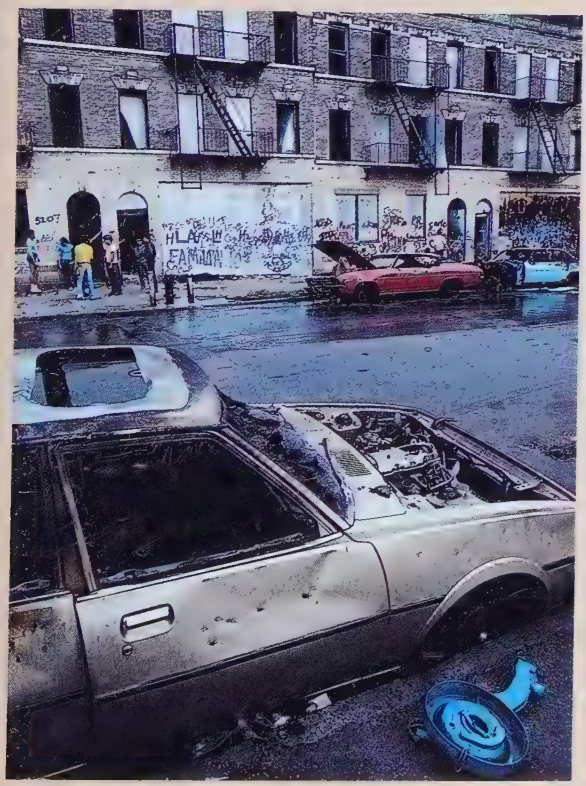
The path to confrontation was also being laid by articles on Cuba, a divided Canada, Harlem, the Philippines under Marcos, and South Africa—all "bad news" stories for those Board members who remembered the world in palmier days and thought that perhaps our reporting on those troubled places helped make the trouble. A long-standing part of the magazine's tradition had always been its avoidance of controversy, but here we were awash in it.

Masked volunteer undergoing a test of smog's eye-irritating effects illustrated the bellwether December 1970 issue, which featured a major article and a supplement map on how humankind pollutes the environment.

In that article the Cuyahoga River in the Cleveland factory district (upper right) seemed a modern-day Styx, so polluted with oil and debris that it had caught fire the year before. Raw petroleum gushed from a drilling platform off Louisiana (right) after a fire that burned out of control for a month in 1970.

Visual pollution assaults our eyes and sensibilities. Cars stripped by vandals added to the seediness of the Sunset Park area of Brooklyn, a neighborhood since renovated through a joint initiative of business and government. Near the foot of the Great Pyramid of Khufu, pieces of litter sit as rude testimony to thoughtlessness.

ROBERT W. MADDEN, NGS (RIGHT CENTER); LOUIE PSIHOYOS (FAR RIGHT); JAMES P. BLAIR, NGS



In the Italian industrial city of Milan, a centuries-old Madonna (above) is obliterated by acid formed from rainwater and sulfur deposits left by air pollution. As the environment emerged as a major theme of the GEOGRAPHIC, its spotlight turned to examples of man's carelessness and destructiveness, such as tree-killing emissions from smokestacks and automobiles, pesticides harmful to wildlife, and radiation released from Chernobyl.

Overgrazing by flocks of goats was blamed in part for expanding the wasteland of the African Sahel, where nomads were compelled to settle in shantytowns (facing page) like this one on the edge of Nouakchott, Mauritania.

JAMES P. BLAIR, NGS (ABOVE); GEORG GERSTER

Our first brush with it came when the American Jewish community reacted sharply to our description of conditions for Jews in the Syrian capital of Damascus. The need to explain our position led to the first Editor's column, which has become a standard feature.

In the mid-1970s certain distressed Board members proposed an editorial oversight committee. It never materialized; no journal can survive with a committee watching over the shoulder of an editor. In its stead, a "Reaffirmation of Editorial Policy" was agreed upon, stressing the slow evolution of change. It was printed on the January 1978 contents page, and we went on with our work.

Actually, the magazine was doing nothing that it had not always done—first-person narrative reporting. The facts stood by themselves beyond our power to affect. The French Canadians were talking of separation from Canada. South Africa, alone among nations, was enforcing racially-based apartheid as a matter of national policy. The family and friends of Marcos were running a nation like a personal corporation. In Cuba Fidel Castro had made dramatic strides in literacy and medical care. We could say no different.

NEW EXUBERANCE came to the magazine through William Graves's "Expeditions" department. A sign in his office proclaims that "Adventure is a sign of incompetence," and during the past few years a number of unforgettable "incompetents" have trekked through our pages—Tim Severin crossing the Atlantic in a skin boat in the wake of the Irish abbot St. Brendan; Robyn Davidson crossing the Australian outback on a camel; Naomi Uemura making it solo to the North Pole; Ed Yost just failing, then Ben Abruzzo, Maxie Anderson, and Larry Newman succeeding in making the first transatlantic balloon flight. And two figures with that special kind of GEOGRAPHIC magic—Peter and Barbara Jenkins, walking across America and into fame by participating in the life of the unreported people of the back roads.

It was just such people who found themselves in predawn lines for gasoline when the oil embargo and skyrocketing oil prices hit the world and the United States and Western Europe and Japan suddenly realized their vulnerability in providing for their own energy futures. It was a subject in which Gil and his staff had been interested from the beginning. Ken Weaver's "Search for Tomorrow's Power" in 1972 had opened a continuing series of articles on oil resources, coal, wind power, geothermal and solar energy, natural gas. We visited "The Arab World, Inc." and rode the supertankers across the world's oceans. We went where the energy play was—Alaska's North Slope, Canada's tar sands, Oman, Saudi Arabia, Kuwait, the North Sea, and the Atlantic continental shelf.

Then, in 1979, came a decisive moment. In April, within days of publication of our article on "The Promise and Peril of Nuclear Energy," a reactor at Three Mile Island melted down. What the magazine had called "the friendly atom" in 1954 and "the obedient atom" in 1958 suddenly proved to be neither. The extent of the difficulties and dangers in using nuclear fuel as a commercial power source was revealed; the agencies and corporations involved in that development had told less than the whole truth about the depths

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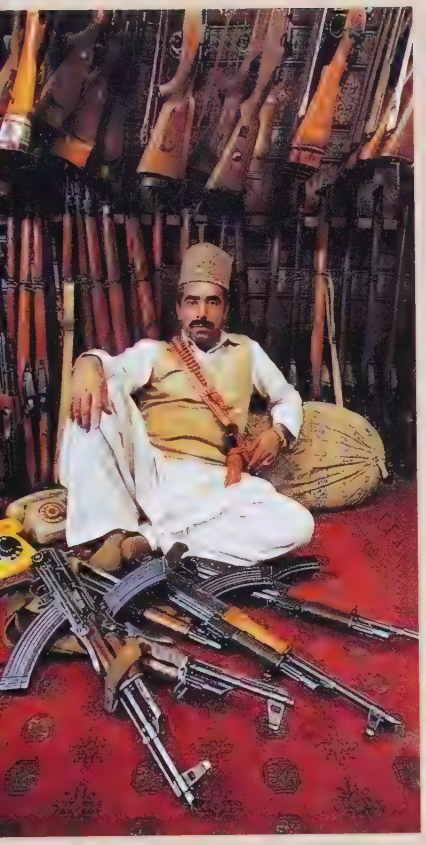
Fear and the future's uncertainty haunt the face of an Afghan girl (right), eloquently photographed by Steve McCurry in a refugee camp in Pakistan. On the cover of a 1985 GEOGRAPHIC, *she brought home the terror of war in a realm where poorly armed freedom fighters faced more than 100,000 Soviet troops. To chronicle global violence and repression, and dispassionately explain its roots, magazine writers and photographers went—often at great risk—to places making newspaper headlines.*

At the funeral of compatriots killed during a foray into Lebanon, Israeli soldiers (above) mourn atop the grave of an earlier battle's casualty. South Africa's unyielding policy of apartheid is epitomized in the black township of Soweto as a mother and children stroll toward an armored vehicle (left).

Robert Caputo's poignant April 1988 article on Uganda reported on the vicious tribal wars that slaughtered perhaps 800,000—including the wife of this Baganda farmer—and the virulent AIDS epidemic. His report drew kudos from World Health Organization officials attempting to stem the disease.

DAVID TURNLEY, DETROIT *FREE PRESS* (LEFT); JODI COBB, NGS (ABOVE); STEVE McCURRY (TOP RIGHT); ROBERT CAPUTO



Armed conflicts change borders, governments, and societies—and the NATIONAL GEOGRAPHIC has reported on them since 1900 and the Boxer Rebellion. Both World Wars, Korea, and Vietnam were covered by the magazine.

We sent a team to Pakistan's border with Afghanistan in 1985, seven years into the Soviet Union's ten-year effort to control that country and the **mujahidin**—*freedom fighters. Photographer Steve McCurry found that the business of war kept Afghan refugee arms merchant Haji Baz Gul close to his two telephones and his assorted deadly weapons in Darra, Pakistan. Before him lay coveted AK-47 Kalashnikov assault rifles, priced at $1,200 each.*

STEVE McCURRY

of the problems. Where to turn for energy? Some of the best oil resources were controlled by nations of uncertain stability and vulnerability. Burning coal seemed a dirty alternative. Synthetic fuels had promise but were a long way from commercial viability.

Gil decided on a major departure and directed publication of a 13th issue of the magazine in 1981, a special report devoted to a single topic—energy. It appeared in February and was one of the pinnacles of his career as Editor, even though he had become President of the Society by the time it was published. Another was the opening of long-closed doors: In 1971 the magazine published an exclusive report by Audrey Topping, one of the first Western journalists to travel widely in China after the Cultural Revolution. In 1973 Ed Kim squeezed his way into North Korea via Moscow, the first Western photojournalist to visit the country in 30 years. Three years later Fred Ward was able to travel freely inside Cuba, and in 1980 we unlocked the last closed door when Mehmet Biber managed to get into hermetic Albania—altogether a good bag of firsts for any decade of reporting. An ironic footnote is that as of 1988 among the few nations in which we had no members were North Korea and Albania.

Not that in those days we had many in Syria or Egypt, countries we reported on when the Soviet presence was paramount and few American reporters were allowed on the premises. We wanted those stories because Gil stressed the need for balance, for a diverse mix, in every issue. One of his guiding principles was that every member had to find at least one article in every issue that he or she found of interest. Those interested in the dramatic turns of the Middle Eastern world during the 1970s would find them, generally in an issue that featured horses of entirely different colors.

In 1972 Tom Abercrombie's "The Sword and the Sermon" had expounded, for the first time in a major American magazine, the history of Islam and divisions between Shiite and Sunni Muslims, terms the American people would come to know during the Iranian hostage crisis eight years later. Much in history helped to explain the present. Loren McIntyre's piece on the Inca; Howard La Fay's and David Alan Harvey's article on the Maya; Merle Severy's and James Blair's still definitive work on the Celts; and the story I did with Gordon Gahan on the Minoans and Mycenaeans illuminated entire historical epochs and cultures whose tendrils reach into the present. They established a genre that only the GEOGRAPHIC is equipped to do so well.

DRIVEN BY THE SOCIAL CONCERNS of the 1960s and '70s, people turned to the past with relief. But they were also fascinated by glimpses of a future being born out of basic and applied science. The magazine made a permanent record of America's reach into space, documenting Mercury, Gemini, and Apollo flights, culminating in the first and subsequent lunar landings. In 1976 Viking got to Mars and gave us unforgettable images from the red planet. That same year we published "The New Biology," our voyage into the human cell. Samuel Matthews reported on plate tectonics and the new geology and also global

climate change. We also went with young scientists like Robert Ballard down to the Galápagos Rift and found there new life forms in the cold abyss of the deep sea. We were a mirror of whatever time we were in. We changed, we reflected, we held up the light, and I cannot but think that people who read the magazine in this turbulent period had a better grip on reality as a result.

AS THE EDITOR'S BATON WAS PASSED to Wilbur E. Garrett in August 1980, a great story bridged past and future. Rowe Findley's masterly account of the cataclysm at Mount St. Helens became at once, and has since remained, the single most memorable article in the magazine's century of publication. The article presaged many things about the Bill Garrett editorship—chief among them the instinct for the big story. We had a peerless first-person account; what we needed were photographs of the colossal event. Under the direction of Tom Smith, chief of illustrations, Bruce McElfresh left no stone unturned in the search. The cover photograph was taken by an amateur, as were many inside pictures. The entire effort was a triumph of collection and editing.

The most recent years of the magazine's history will need a chronicler from the future, for we are still in medias res. But this much can be said without fear of retrospective change—no years have been more creative or innovative. Big and important and different stories became the rule rather than the exception, and the

"Help my baby—please!" For a Vietnamese mother, the desperation of war became almost unbearable when she could find no doctor for her sick infant. When a U.S. Navy patrol boat stopped her vessel for inspection, she thrust her child toward an interpreter with the urgent plea. The sailors gave her all the medical aid they could before moving on. That was in 1968, and it would be 1973 before a truce ended the United States' 12-year combat involvement. The GEOGRAPHIC published a dozen articles on the Southeast Asia conflict that took more than a million lives, including armed forces of both sides but mostly civilians—many of them children.

WILBUR E. GARRETT, NGS

Cataclysm and catastrophe not only alter the shape of the planet but also take a continuing toll on humanity. Behind the headlines of disasters the GEOGRAPHIC has always tried to provide both human and scientific insights. In 1986 a lake in Cameroon suddenly expelled a mammoth hiccup of deadly carbon dioxide that suffocated 1,700 villagers (below). A mother in Bangladesh mourned her dead baby in 1975 (right), victim of famine that recurs in that overpopulated land. In India's Rajasthan women were driven to the scant shelter of a tree by gritty winds (top center), ominous prelude to the seasonal monsoon,

whose welcome rain sometimes means deluge and death.

In 1980 a National Guard helicopter crew found a truck holding two of the 61 people killed in the volcanic explosion of Mount St. Helens (right). For Assistant Editor Rowe Findley, who witnessed the aftermath of the violent eruption and reported on it in the January 1981 GEOGRAPHIC, it demonstrated the peril "for all of us living on a planetary crust so fragilely afloat atop such terrible heats and pressures. Never again . . . would I regain my complacency about this world we live on."

HELIMISSION (ABOVE); STEVE RAYMER, NGS (TOP LEFT); RALPH PERRY, BLACK STAR (RIGHT); STEVE McCURRY

JANUARY 1981

GEOGRAPHIC emerged as a voice of importance and consequence.

Staff writers and photographers felt that Bill Garrett's style was akin to Melville Grosvenor's instinctive journalism: *There's the story, right there; let's go get it!* Often Bill went and got it himself. The old field maxim—you don't know if you don't go—became an operating imperative in the Editor's office. He, for instance, wrangled permission to go to Angkor Wat, closed to the outside world since 1975 when Pol Pot took over Cambodia, now called Kampuchea. He took Peter White and Dave Harvey with him, and they brought out a second story, the living nightmare of Kampuchea, where Pol Pot's revolution had resulted in the death of more than a million of his own people.

With the increase in terrorism and political exploitation of human tragedy in places like Ethiopia, the Sahel, Haiti, and Nicaragua, the stress points seemed to run deeper, and the writing and photography from those places were graver than any we had published. We looked into Khomeini's Iran, and, more hopefully, into a quickly changing China.

We looked as well into the abyss. With "The Poppy," Peter White's and Steve Raymer's brilliant reportage began with a flower. From its seed capsule comes opium, which can be refined into morphine to block severe pain, and heroin, a drug so abused that it affects every aspect of world culture, economy, and politics.

Again, the magazine was changing yet staying the same. New features like Members Forum, On Assignment, and Geographica were added. The most striking innovation, however, was the use of holograms on the cover—the first three ever attempted by a large-circulation magazine. These publishing firsts attracted a lot of public attention, as did Bob Ballard's discovery of *Titanic* and my own article on the landfall of Columbus at Samana Cay in the Bahamas.

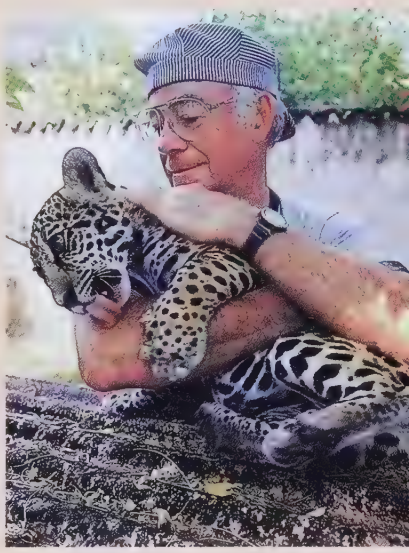
AS THE CENTENNIAL of the Society drew near, Bill Garrett was once again thinking big—not one centennial issue but four to close the year. Those issues were monuments, containing 130 extra pages and examining Society history and the overriding questions of humanity's past on earth, achievements in exploration, and the future of the planet under the stress of human population and development—great themes played out on a large scale in articles of enduring interest and importance. Two map supplements—a world map using a more realistic projection and an extraordinary view of the Himalaya—were published.

Always the wheel of time and change is turning in human affairs, presenting to the magazine the possibility of new discovery, new exploration, and the unexpected big story that makes the presses rattle. Some who served on the final years of this hundred-year voyage are gone, and this index is their epitaph: Shor, Conly, MacLeish, La Fay, Gahan, Parks, Aikman—staff writers, photographers, and editors who lived interesting lives and brought to you interesting stories from far places.

They were among that particular and peculiar legion of talented journalists upon whose days and nights in the field this particular and peculiar edifice always has and always will rest.

Mountain music springs from the fiddle of Carolyn Tolley (facing page), who plays for a young listener at a festival near Pipestem, West Virginia. Searching for the essence of a place, GEOGRAPHIC stories on states, cities, and nations strive to convey the texture of everyday life.

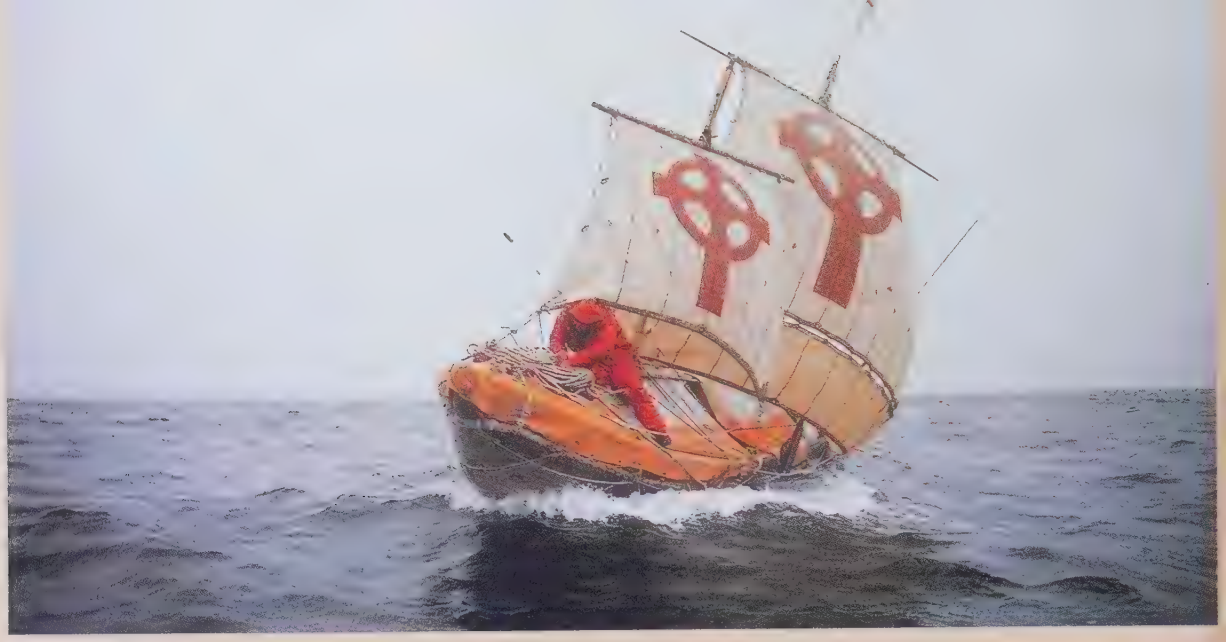
JODI COBB, NGS



Threatened native: A young jaguar gets a pat from Editor Wilbur E. Garrett in Guatemala. A hotel manager adopted the orphaned cat; its parents probably were killed for their skins, the sale of which is illegal. The owner hopes to breed the cat and free the cubs in the wild.

Long a student of both wildlife and Mesoamerica, Garrett has promoted creation of Central American wildlife sanctuaries. GEOGRAPHIC articles trace the worsening problem of endangered species in the face of shrinking habitats and the illegal international wildlife market.

DAVID ALAN HARVEY



Adventures in search of history and geography have long intrigued GEOGRAPHIC *readers. Using medieval documents, modern-day explorer-historian Tim Severin built a replica of a leather boat (far left) that, legend says, the sixth-century* A.D. *Irish monk and explorer St. Brendan may have sailed to the New World. Severin successfully sailed the wood-and-oxhide vessel from Ireland to Newfoundland in 1976.*

Alone in the outback (left) Australian Robyn Davidson, her four camels, and dog, Diggity, endure a drenching rain on a 1,700-mile trek across Australia's forbidding western desert.

Triumphant hug (below) unites climbers Annie Whitehouse and Christy Tews after their all-woman team reached the Himalayan summit of 26,504-foot Annapurna I.

Afloat on Arctic ice (left), dogs and crew of the Steger International Polar Expedition struggle on their thousand-mile trip from Canada's Ellesmere Island to the North Pole. They were the first to cover the distance by dogsled without resupply since Robert E. Peary attempted the journey in 1909.

NATHAN BENN (TOP LEFT); RICK SMOLAN, CONTACT PRESS IMAGES (TOP RIGHT); WILL STEGER (LEFT); ARLENE BLUM

Wrecks ancient and modern tell tales with their remains. On her maiden voyage the doomed luxury liner R.M.S. **Titanic** *slid beneath the waves on April 14, 1912, after collision with an iceberg 400 miles southeast of Newfoundland. The disaster claimed 1,522 lives.*

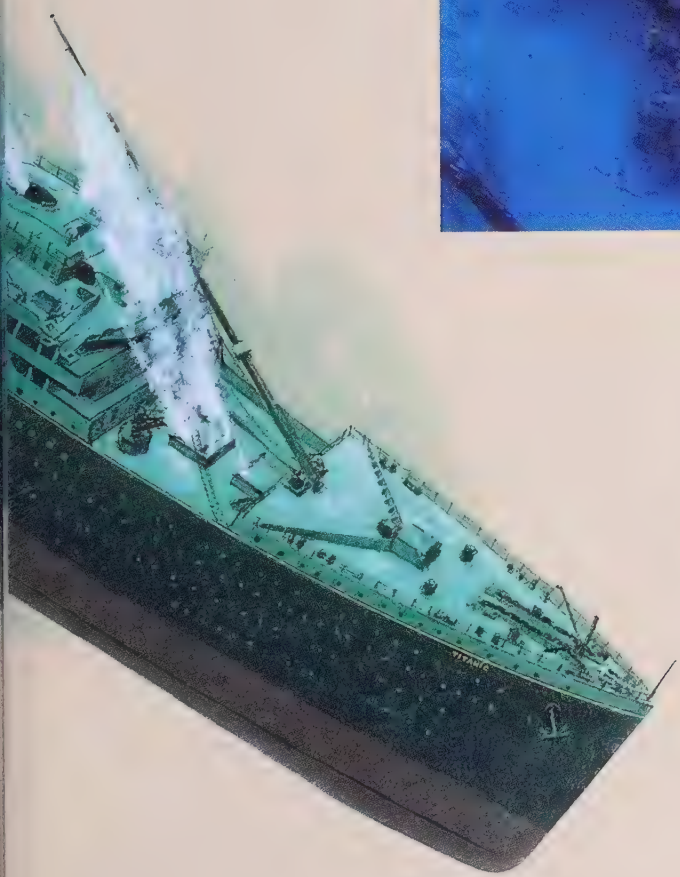
Seventy-three years later, with National Geographic support, undersea geologist-explorer Robert D. Ballard located **Titanic** *two and a half miles beneath the sea and explored her with a combination of manned submersible and a remotely controlled deepsea robot nicknamed* **Jason Jr.** *(right).*

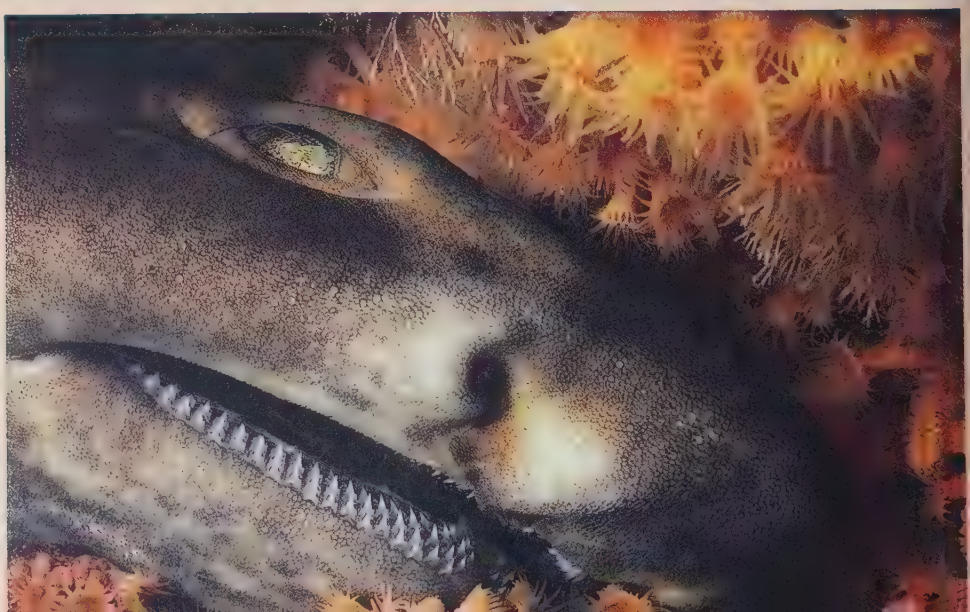
Brandishing porcelain dishes (top), underwater archaeologist Robert Sténuit emerges from a dive on the Dutch East Indiaman **Witte Leeuw (White Lion)** *off the remote South Atlantic island of St. Helena. The ship, sunk by Portuguese carracks in 1613, yielded a rich collection of Chinese Ming dynasty porcelain and nautical artifacts from the ship itself.*

BATES LITTLEHALES, NGS (TOP);
PAINTING BY WILLIAM H. BOND, NGS;
WOODS HOLE OCEANOGRAPHIC INSTITUTION

Thousands of priceless artifacts from the Late Bronze Age were recovered from a 3,400-year-old wreck off the Turkish coast. When divers (right) tried to lift a clay storage jar, Cypriot pottery packed inside tumbled out. A pile of huge four-handled copper ingots litters the seafloor. George F. Bass, with National Geographic Society support, led the excavation of the wreck, which also yielded weapons, exotic woods, and aromatic resins, as well as terra-cotta jugs, a cup, and bowl, all of Mycenaean workmanship (below right).

BILL CURTSINGER





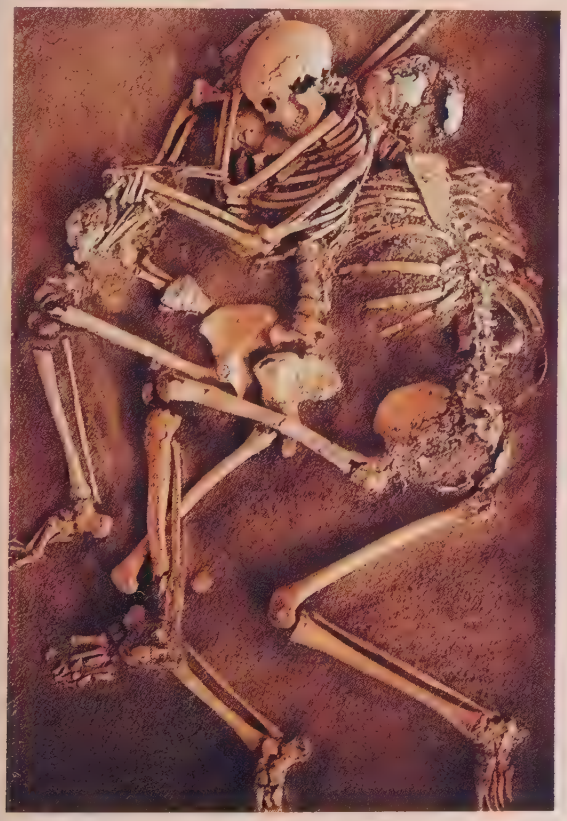
The sea is a wondrous place that mankind has yet to completely explore. And we continue to find powerful statements in the oceans and their myriad inhabitants. A gentle leviathan (left) cruises the waters off Península Valdés on Argentina's Patagonian coast. This southern right whale, returning to its breeding grounds, senses no danger from a diver.

A southern elephant seal pokes its head through a kelp bed to growl at an intruder (above) in the Kerguélen Islands, part of the French Southern and Antarctic Territories in the Indian Ocean.

Anemone-like zoanthids cushion a dozing California swell shark (bottom, far left), which can inflate itself by gulping water or air.

Off southern Australia a leafy sea dragon sports a beautiful but tough exoskeleton (left).

MITSUAKI IWAGO (ABOVE); DAVID DOUBILET (LEFT); FLIP NICKLIN



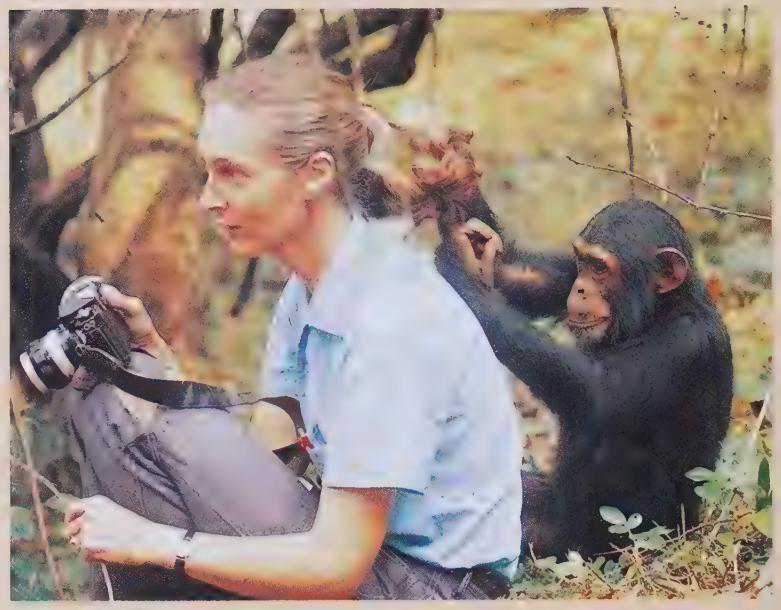
Ancient civilizations tell their tales as archaeologists report on the findings of Society-sponsored expeditions. One of the most spectacular sites, the 1,500-year-old tomb of a warrior-priest (facing page) who ruled the Moche people of Peru's north coast, is watched over by silhouetted guards alert for looters. The grave yielded fabulous gold artifacts. Recitals once echoed through a small marble concert hall called an odeum at Aphrodisias, an ancient Greco-Roman city excavated in Turkey (top). Poignant testimony to disaster, a man, young woman, and small child were crushed during an earthquake in the city of Kourion on Cyprus (left). In Mexico, nine-foot-tall Maya figures stand in the late seventh-century A.D. Palace of Palenque.

BILL BALLENBERG (FACING PAGE); DAVID L. BRILL (TOP); MARTHA COOPER (LEFT); DAVID ALAN HARVEY

Creatures great and small, fascinating and often imperiled, challenge our stewardship of the planet: from bluebirds to blue whales, marauder ants to muskoxen. In Tanzania's Ngorongoro Crater and nearby Serengeti National Park, black rhinoceroses (right) that numbered in the hundreds in the 1970s have plummeted to only about 20 today due to poaching. Ngorongoro's lions have fared better. Youngsters lounge on a parched lake bed during the dry season (below). In Island Park, Idaho, a great gray owl shelters her owlets after a night's rain (left). Embodying all the raw power of the wild, a brown bear tears into a sockeye salmon in Alaska's Katmai National Park.

MICHAEL S. QUINTON (TOP LEFT); EMORY KRISTOF, NGS (TOP RIGHT); MITSUAKI IWAGO (LEFT); JOHNNY JOHNSON

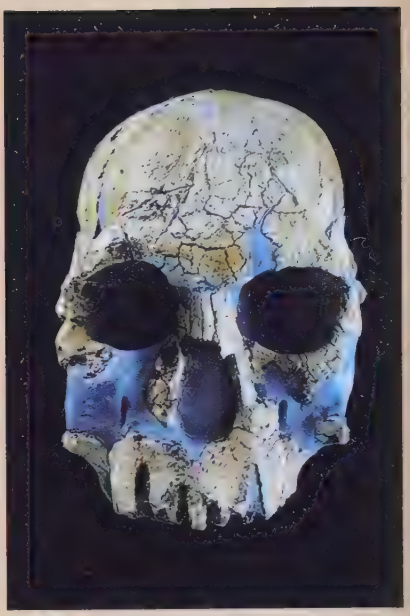
Observing the great apes up close—something many scientists once believed was impossible—has yielded a wealth of data about humankind's closest relatives. Supported in part by Society research grants, three scientists have achieved unprecedented field studies of primates. The first, Jane Goodall (right) began in 1960 at remote Gombe National Park in present-day Tanzania, making the chimpanzees' home her home. After earning the trust of the wary animals, she studied their hunting behavior and discovered their tool-making capabilities. Evolutionary biologist Stephen Jay Gould calls her work "one of the Western world's great scientific achievements."



Likewise, Dian Fossey (opposite) pursued studies of the endangered mountain gorilla in the highlands of Rwanda, mapping family relationships and interactions. One of her favorite subjects, Digit (above), was killed by poachers; Dian herself was murdered by an unknown assailant in 1985.

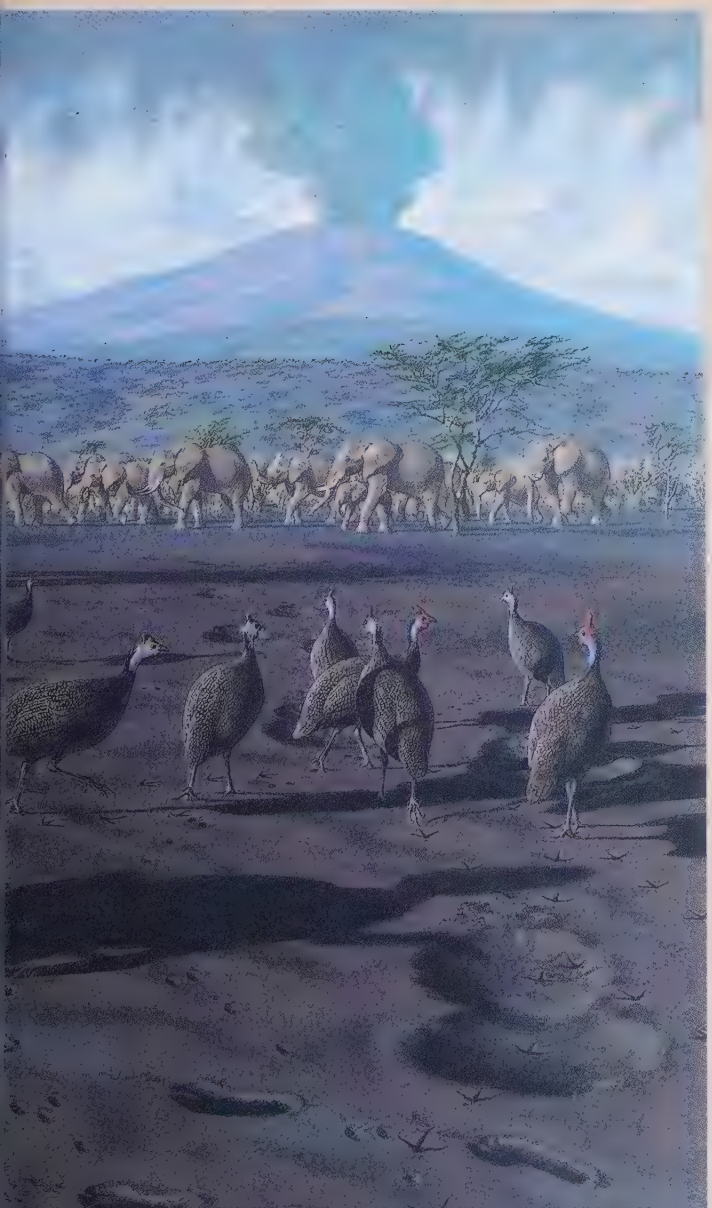
Biruté M. F. Galdikas (right) has accomplished pioneering observations of elusive arboreal orangutans in Kalimantan (Borneo), Indonesia. She also raised orphans confiscated from pet owners for release into the wild.

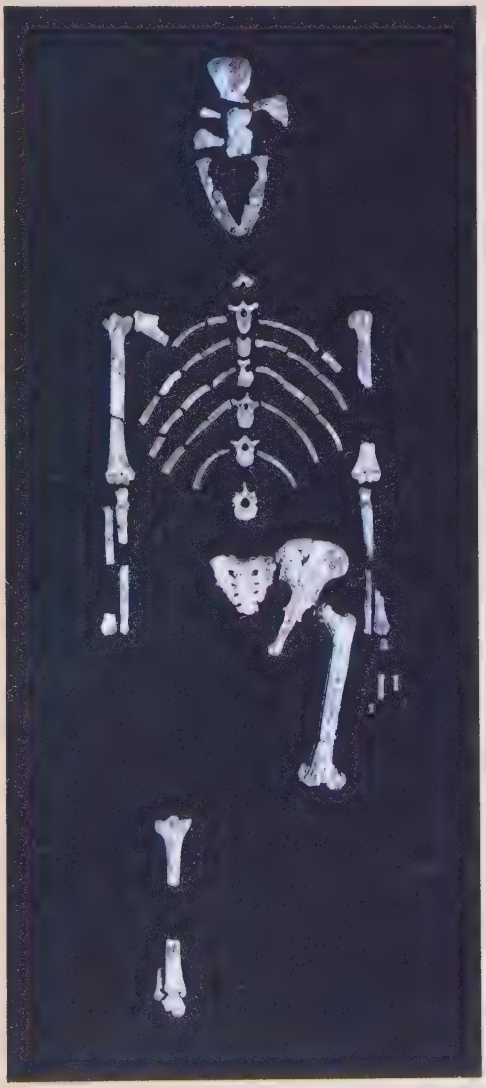
DEREK BRYCESON (TOP); DIAN FOSSEY (ABOVE); ROD BRINDAMOUR (RIGHT); ROBERT M. CAMPBELL



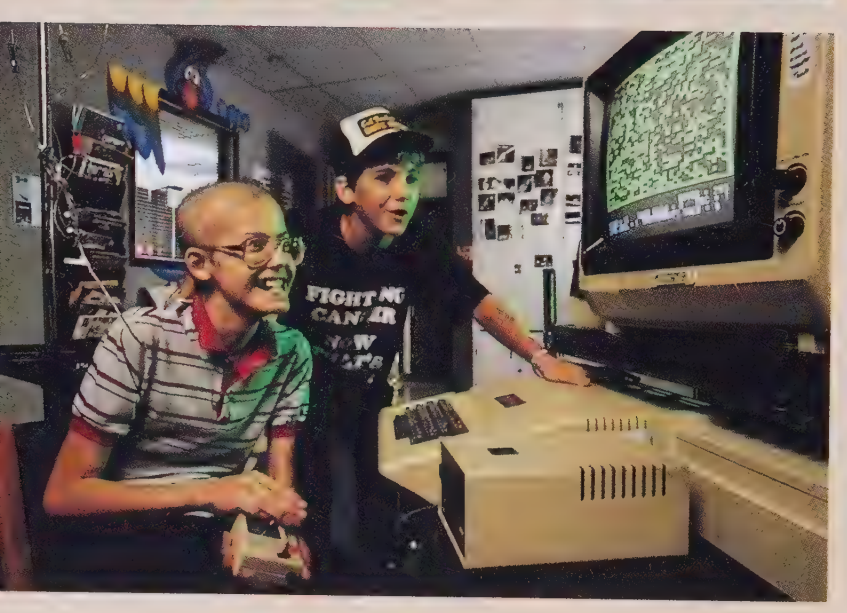
Bringing to light the extraordinary saga of early human species, Louis S. B. Leakey and his son Richard (far left) examine fossils beside Lake Rudolf, Kenya. In this area Richard's team in 1972 located a 2.8-million-year-old skull, designated 1470 (left), earliest evidence yet of the genus **Homo.** *Louis's wife, Mary, found footprints made by bipedal individuals in damp volcanic ash; this re-creation (below) suggests how the prints were made about 3.7 million years ago.*

In 1974 Donald C. Johanson found the most complete early skeleton to date in northeastern Ethiopia. Nicknamed Lucy, the female—since designated **Australopithecus afarensis**—*walked upright some three million years ago.*





GORDON W. GAHAN (TOP LEFT); ROBERT M. CAMPBELL (TOP CENTER); PAINTING BY JAY H. MATTERNESS; DAVID L. BRILL

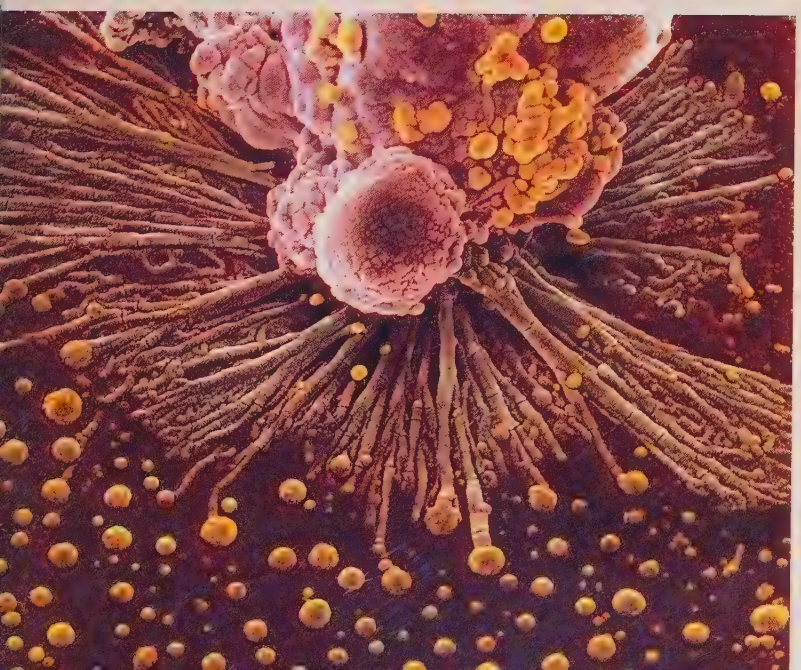


The worlds and wars within our bodies come vividly alive in several GEOGRAPHIC *articles dealing with breakthroughs in medical science. In our June 1986 look at the human immune system, a young cancer patient (above) uses a video game to visualize his defense system's T cells. Spotlighting a number of diseases caused by immune disorders, including AIDS, the article was richly illustrated with pictures of human defense cells, like the blood-cleaning macrophage (right center). Lennart Nilsson, the Swedish master of photomicroscopy who captured those images, was a major contributor to the Society's 1986 book* **The Incredible Machine,** *which included his remarkable views of prenatal life (right).*

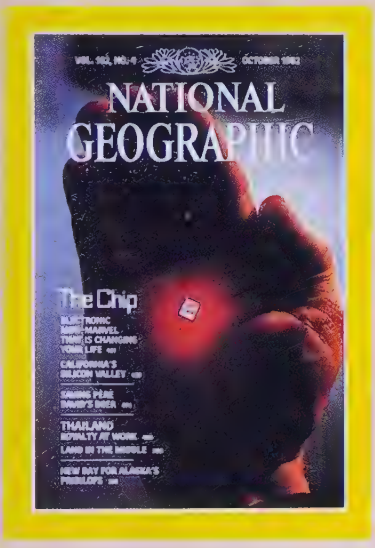
In the January 1987 magazine, photojournalist Howard Sochurek reported on state-of-the-art medical technologies, like magnetic resonance imaging (MRI). Able to view tissue through bone (far right), MRI is but one of many new diagnostic tools that are revolutionizing procedures in operating rooms (upper right) around the world.

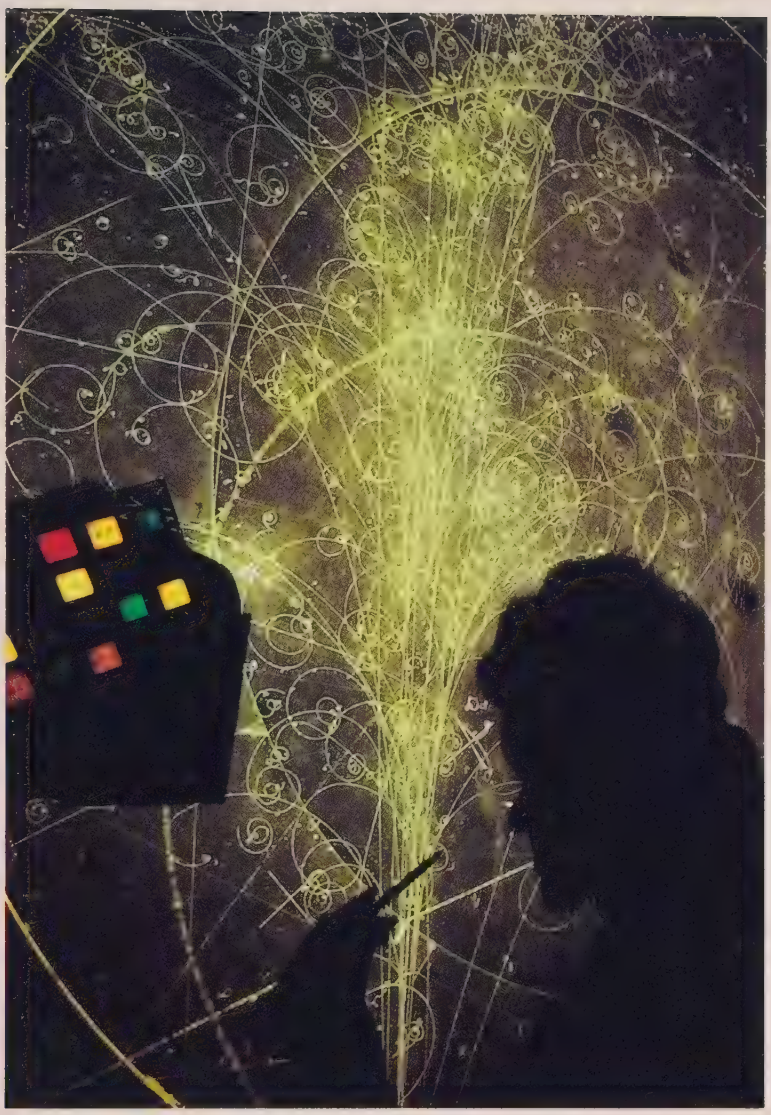
From the labs of theoretical physics other breakthroughs were reported on in our May 1985 article on the atom. By beaming subatomic particles at cancer cells, neutron therapy (top) performs the equivalent of conventional surgery.

KEVIN FLEMING (UPPER LEFT); BILL BALLENBERG (ABOVE LEFT); LENNART NILSSON (ABOVE); LENNART NILSSON/© BOEHRINGER INGELHEIM INTERNATIONAL, GMBH (RIGHT); HOWARD SOCHUREK



Heralding the high-tech 1980s, our October 1982 article on the chip was followed in March 1984 by a survey on lasers and the technology of holograms. On the cover of that issue appeared our first hologram, to be followed by another in November 1985. In celebration of our centennial year, the entire front and back cover of the December 1988 issue consisted of holographic images. At American Bank Note Holographics, Inc., in Elmsford, New York, images of a crystal

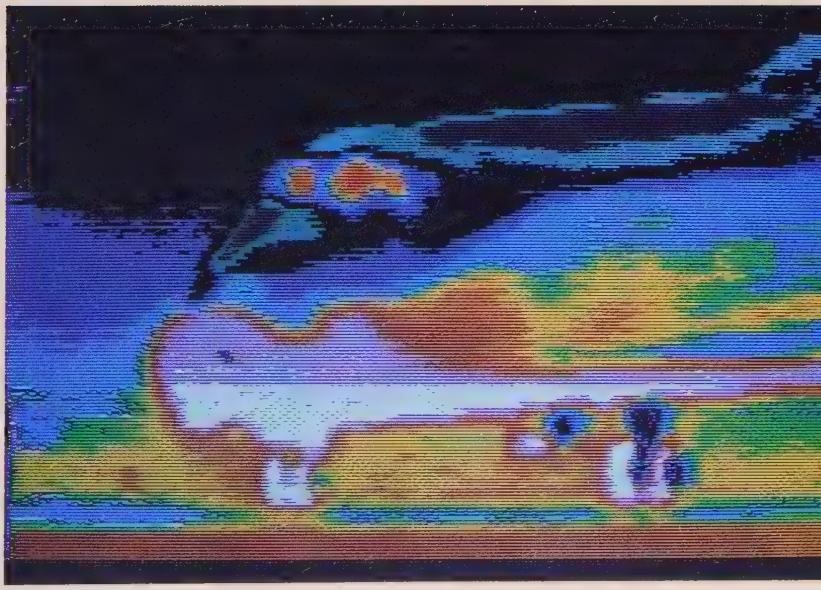


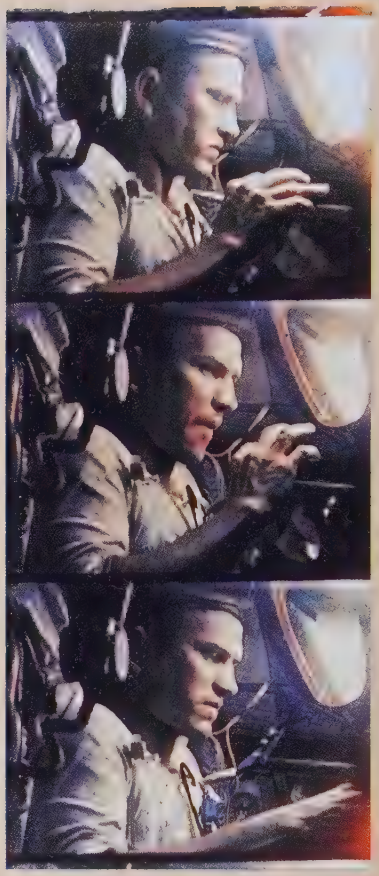


globe were replicated on polyethylene sheets (left). One step in a yearlong process, the images were then metallized, laminated on cover stock, and tinted gold before the binding of 10.9 million copies.

Unimaginable without chip technology, computer-generated images—like the one portraying temperatures on the space shuttle **Columbia** *in our November 1982 issue (right)—have appeared in many of our pages. With the aid of computers, scientists are also delving into the domain of the ultrasmall. In our May 1985 article "Worlds Within the Atom" (top right) the tracks of colliding subatomic particles are plotted.*

SISSE BRIMBERG (LEFT); KEVIN FLEMING (TOP RIGHT); INFRAMETRICS, INC., FROM NASA VIDEOTAPE BY DOUG NELSON



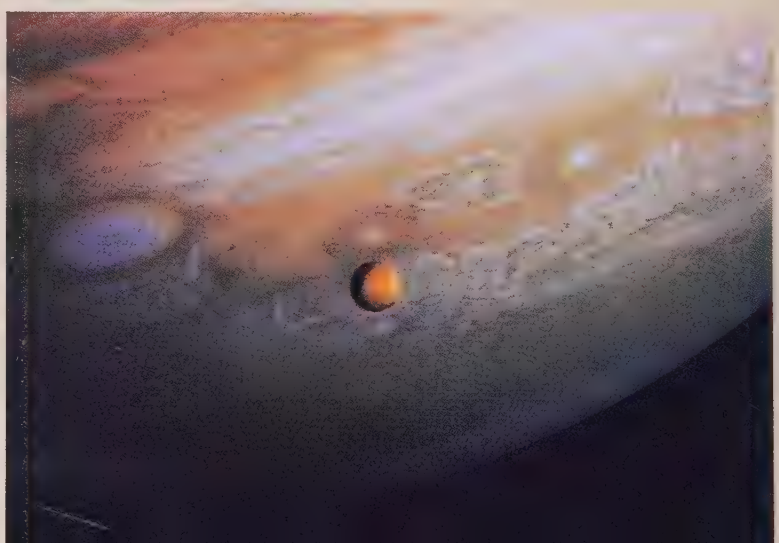


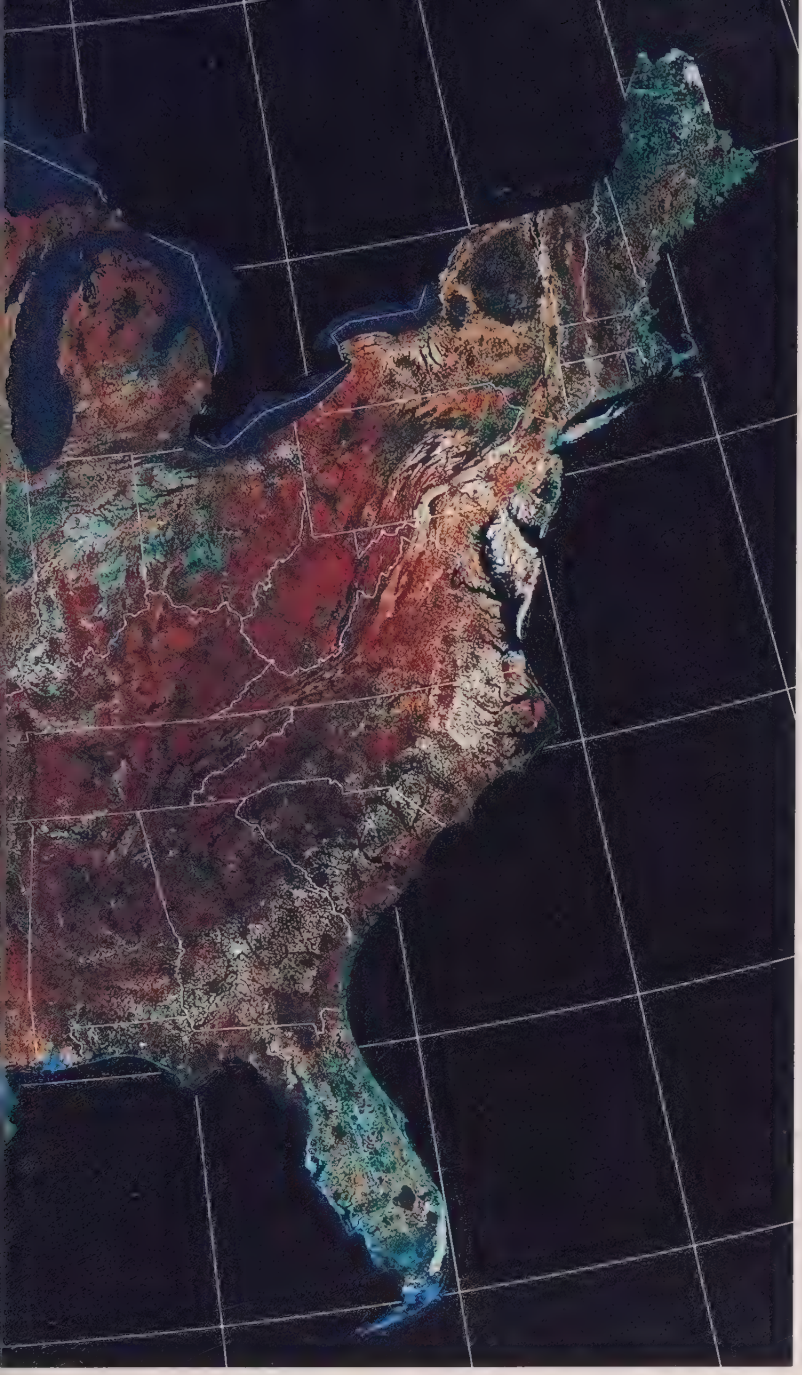
Space is home turf to readers of the GEOGRAPHIC, *which has chronicled events from Sputnik to the shuttle. Four years before man first planted his foot on the moon (below), astronaut Frank Borman (above right) commanded the 1965 flight of Gemini 7 on a mission that saw the first rendezvous of two craft in space. Here he performs a vision test—part of early efforts to gauge the effects of weightlessness on the senses. Borman now serves as a member of the Society's Board of Trustees.*

At work in space, astronauts James D. A. "Ox" van Hoften and William F. Fisher spacewalk outside the shuttle **Discovery** *in 1985. The crew retrieved, repaired, and relaunched a communications satellite. Earth's limb arcs 220 miles below.*

Three years before disaster, **Challenger** *(opposite) poses for the first ship-to-ship photograph of a shuttle in space, taken by a West German satellite that had been put into orbit. The open cargo bay reveals another satellite ready for launch.* **Challenger** *blew up 73 seconds after launch in January 1986.*

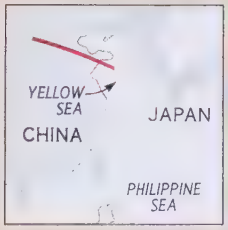
On a tour of Jupiter and Saturn, Voyager 1 sent back this true-color image of the moon Io orbiting Jupiter's bulging girth. ALL BY NASA



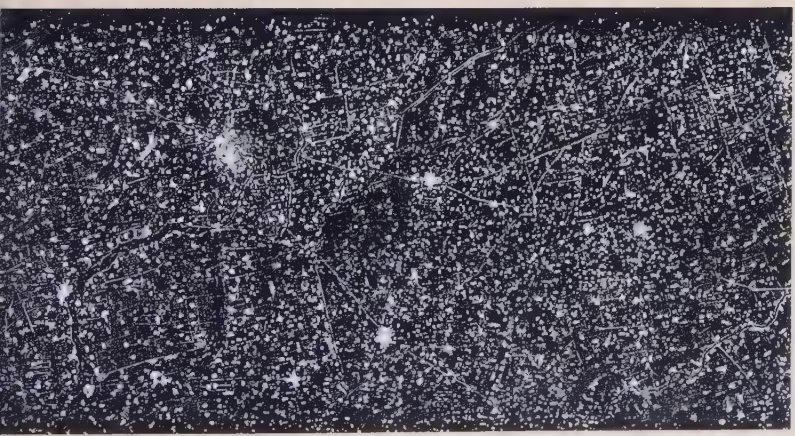


The contiguous 48 states appear virtually cloud free in a mosaic of 15 images taken by the National Oceanic and Atmospheric Administration satellites. Vegetation shows as red. A computerized geometric process, developed by the U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota, gives the images a high degree of accuracy.

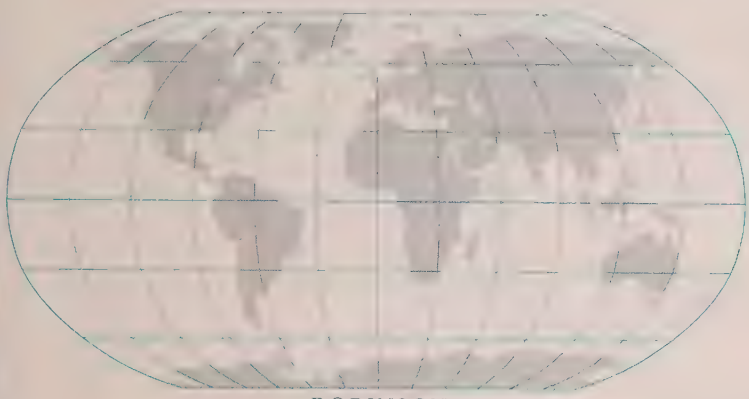
Space-borne radar from the shuttle **Columbia** *in 1981 imaged a swath of China 50 kilometers wide. The pass extended from the Great Wall to the Yellow Sea (inset map). Here in eastern China the clustered villages appear as stars; grid pattern shows field boundaries (bottom left). An earlier pass over the desert to the west proved radar could penetrate sand, revealing ancient drainage patterns of potential value to hydrologists, climatologists, and geologists.*



Longer strips of the radar pass undergo inspection at the Jet Propulsion Laboratory in Pasadena, California (above). Physicist Charles Elachi served as principal investigator of the JPL team that developed the radar.



CHUCK O'REAR (TOP); NASA, JET PROPULSION LABORATORY (LEFT); U.S. GEOLOGICAL SURVEY'S EROS DATA CENTER (UPPER LEFT); NGS CARTOGRAPHIC DIVISION



ROBINSON

VAN DER GRINTEN

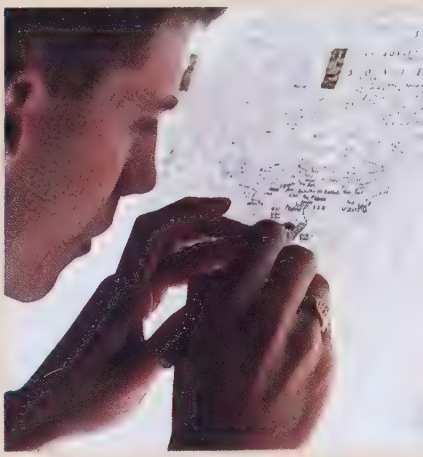
MERCATOR

Which of the three maps at left portrays the earth as it really is? The answer is none, since it is impossible to accurately put the round earth on flat paper—but the Robinson projection comes close.

For centuries mapmakers have grappled with the question of how to map the round earth on flat paper. The Mercator projection, for instance, introduced in 1569 as an aid to navigation, vastly distorts landmasses in the high latitudes—Greenland is 16 times as large as it should be.

Shortly after 1915, when the Cartographic Division was established, the National Geographic Society adopted the projection of Alphons van der Grinten of Chicago, which gave a more realistic view but still greatly enlarged such northern countries as Canada and the U.S.S.R. With an aim toward minimizing distortion, the new world map issued for the Society's 1988 centennial uses a projection devised by Arthur H. Robinson at the University of Wisconsin-Madison.

In addition to mapping the world, the Cartographic Division produces map supplements, such as the 17-map Making of America



series, page maps illustrating magazine stories, atlases, mural maps, and globes. Meticulous research (facing page) and artistic design as well as precise name placement (above) are but three of the steps in the preparation of these products that help our members find their way around the world.

BRETON LITTLEHALES (OPPOSITE AND ABOVE); NGS CARTOGRAPHIC DIVISION

The Future Is an Unbroken Trail

Scouting alternatives for a trek into our second century

By GILBERT M. GROSVENOR PRESIDENT AND CHAIRMAN OF THE BOARD

"NO ONE EVER THROWS IT AWAY. . . ." The rate at which copies of our Society's yellow-bordered official journal accumulate has become part of American folklore.

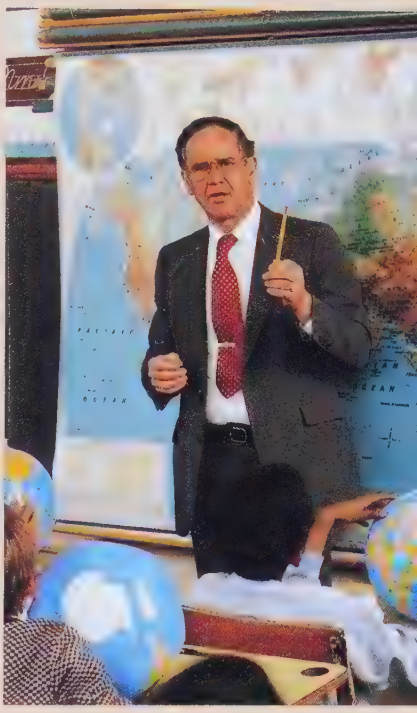
We've been told that all those copies would stretch to the moon and back, that all those pages could cover Connecticut (poor Connecticut!), that the weight of growing stacks of them might affect the balance of earth's rotation on its axis. One enterprising writer even investigated the insulation value of GEOGRAPHICS spread over an attic floor. Conclusion: The high-quality paper that makes for sharp images and long storage life turns out to be a poor retainer of heat.

That's as it may be, but the only insulating role we ever intended for our magazine and Society was to ward off the chill of ignorance.

This index gives entries for all the articles that have appeared in a hundred years of NATIONAL GEOGRAPHIC. It also lists the scores of books the Society has published, except those for the very youngest readers. The index includes titles of our Television Specials and video programs. In a separate section it also lists all the thousands of financial grants we have made to explorers, scientists, and other researchers since 1890.

All those entries show a huge growth of information over the past century, the incredible rate of increase in the production of that information, and the fast-multiplying technologies employed to deliver it. The entries also suggest that no listing, however complete, can draw borders around the Society's present activities, much less its future. For make no mistake, change in the Society, as in the larger world, is not only continuing, it is accelerating.

To imagine what lies ahead, let us consider for a moment the Society's founders and the future they faced a century ago. They too lived in an era of technological change. Labor-saving machines were becoming available, even in the home. On the farm reapers, tractors, and threshers increased efficiency and cut the work load. Some farm laborers left for factory work in cities. There giant steam engines were breathing new life into industry, but the world was already moving from the steam age into one of electricity. Edison's electric light, though new, was increasingly driving back the night, and telephone lines were spiderwebbing city streets. The



To put geography back on the map in U.S. classrooms, the Society launched the Geography Education Program in 1985. Its goals: teacher training and support, innovative educational technologies, public-awareness activities. Taking his message to students, Society President Gilbert M. Grosvenor spoke at Wilkinson Foreign Language Experience School in St. Louis, Missouri, where students were given inflatable globes. "Without geography," he said, "we're nowhere."

SISSE BRIMBERG

Society's founders were among the most highly trained and foresighted people of their time, yet could one blame them if they asked themselves in wonder: "What's next?"

What indeed? The first American automobile had not yet appeared, nor had humans yet left the ground in powered flight. The Kodak box camera was introduced in 1888, the same year that the National Geographic Society was born—a propitious coincidence—but wireless radio broadcasts, much less television, were still decades away. How easy for us now to take for granted changes the founders couldn't anticipate. The past is a road paved with hindsight, while the future is an unbroken trail.

We too ask in wonder: "What's next?" Ours is an era of genetic engineering and microchips, an era when lasers and superconductivity hold promise comparable to electricity and the gasoline engine of a century ago. Yet we do not know the answer to "What's next?" any more than did the founders in their time.

Providing wise counsel through the years, the Board of Trustees (facing page) has strongly encouraged the Society's new commitments to expanded educational activities, research, and exploration. In January 1988 the board approved the establishment of the National Geographic Society Education Foundation with an initial gift of 20 million dollars.

As of December 1988 the Society's trustees were Gilbert M. Grosvenor, Chairman, Owen R. Anderson, Vice Chairman, Lloyd H. Elliott, Vice Chairman, Joe L. Allbritton, Thomas E. Bolger, Frank Borman, Lewis M. Branscomb, Robert L. Breeden, J. Carter Brown, Warren E. Burger, Michael Collins, George M. Elsey, Wilbur E. Garrett, Arthur B. Hanson, Alfred J. Hayre, A. Leon Higginbotham, Jr., Carlisle H. Humelsine, John Jay Iselin, J. Willard Marriott, Jr., Floretta Dukes McKenzie, Melvin M. Payne, former Chairman, Nathaniel P. Reed, B. Francis Saul II, Robert C. Seamans, Jr.

Trustees emeritus included Thomas W. McKnew, former Chairman, Crawford H. Greenewalt, Caryl P. Haskins, Mrs. Lyndon B. Johnson, Curtis E. LeMay, Wm. McChesney Martin, Jr., Laurance S. Rockefeller, Frederick G. Vosburgh, James H. Wakelin, Jr., James E. Webb, and Conrad L. Wirth.

GEORGE C. VON KANTOR
AND JOSEPH S. STANCAMPIANO, BOTH NGS

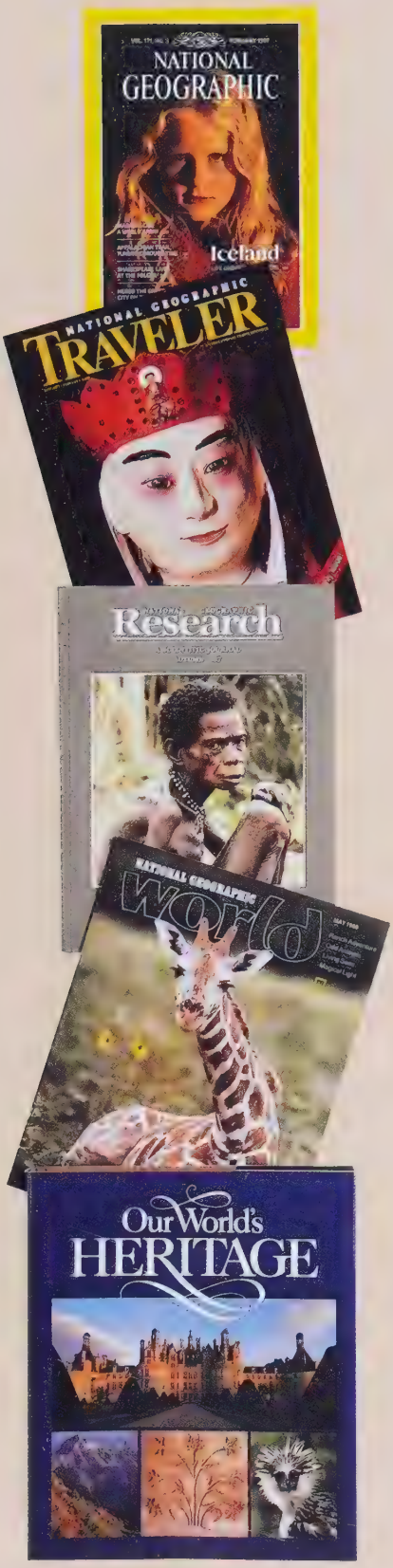
E DO KNOW that this Society has endured because of a willingness from the start to adopt new attitudes and new technologies. We pioneered in the printing of color photography, amid warnings that it would lead to financial ruin. Our television productions became leaders in a new genre of informative programming. We are now in the forefront of developing laser videodiscs that guide junior high and high school students through interactive learning experiences.

Youngsters are also participating in nationwide scientific experiments through a computer network that the Society has begun. Students all over the the country share their findings with other students, often hundreds of miles away, in order that all may contribute to common solutions.

We have always addressed education—in our publications, films, filmstrips, and videos—but never so directly as now. Our centennial gift to the nation has been the creation of the National Geographic Society Education Foundation, with our initial funding of 20 million dollars and the pledge to match an additional 20 million dollars contributed by others. Through the foundation we hope to encourage a renewed emphasis on teaching—and learning—geography. Nationwide surveys funded by the Society have shown the unmistakable need. An appalling geographic illiteracy permeates every age level but is especially acute among the young.

We've set an ambitious goal—erasing that illiteracy from the blackboard by the turn of the 21st century. We're bringing teachers to our headquarters in the nation's capital for intensive month-long geography institutes to improve their knowledge and teaching skills. The program is free to the teachers and their school systems, but we do require one payment. When they go back home, the teacher-graduates must share their new insights and skills with colleagues as well as students. They then become agents of change for better geographic education.

At this writing 27 states have joined with us in organizing



geographic alliances—partnerships of educators, business leaders, and public policymakers dedicated to expanding geographic literacy. We have been instrumental in the creation of those regional alliances, and we continue to assist their growth while promoting the founding of new ones.

IN THIS NEW WAY we are following in the footsteps of the Society's founders: by institutionalizing the importance of geographic knowledge. Such knowledge has always been important but perhaps never more so than now.

Advances in communications are shrinking our world to the point that there are no longer truly remote peoples or isolated problems. Through television, wars in Afghanistan and Angola or unrest in Seoul and South Africa resounds in our living rooms. A starving child on camera in Africa reaches out a bony hand, and millions in the developed world are confronted by that misery and the conditions that cause it. The stock market shudders in New York, and the effects ripple to Tokyo, Hong Kong, Singapore, Paris, and London within a few hours.

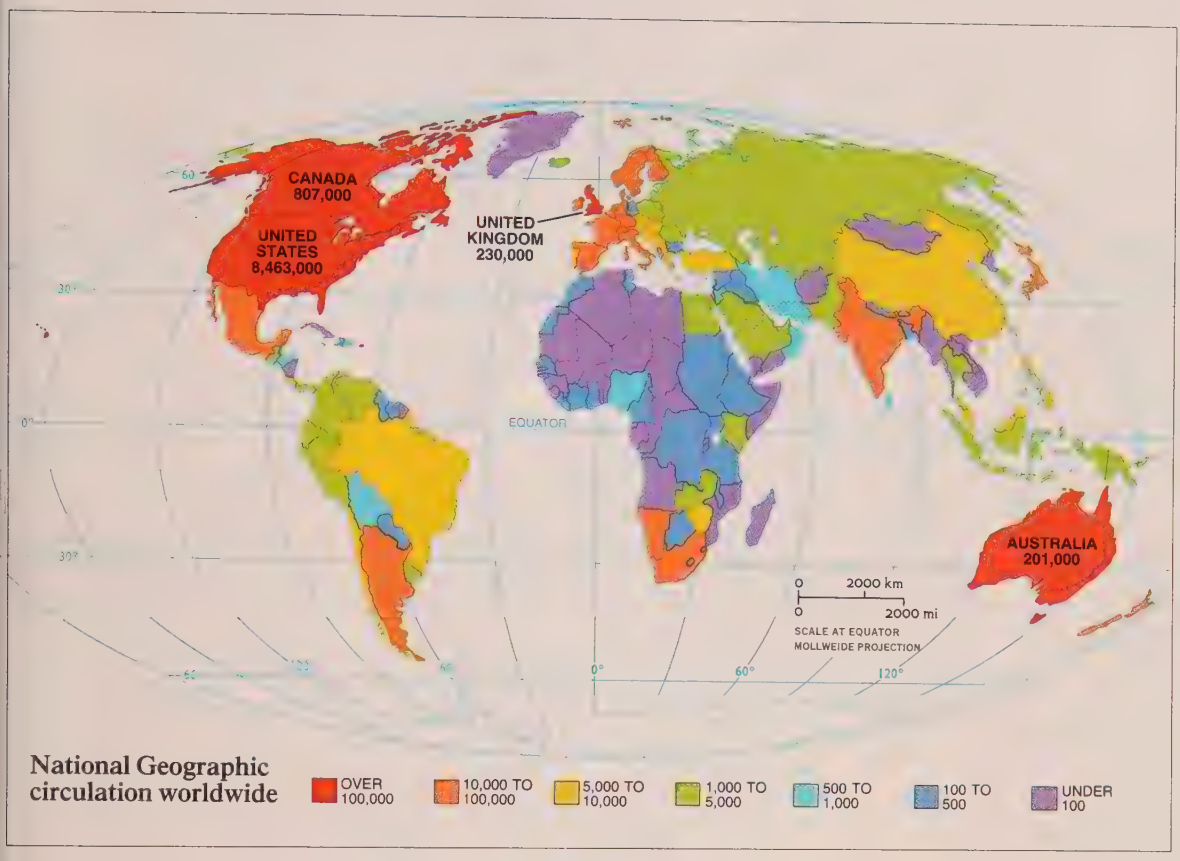
Other markets are affected as well. It's no secret that the United States has lost an edge to other countries in trade. I think that says many things—none of them good—about our ignorance of geography. It's an old axiom that you've got to know your territory to make sales, and Society surveys show convincingly that most Americans don't know the global territory. When some years ago the balance of trade began favoring such nations as Japan and West Germany, there arose a cry for more foreign purchase of American goods.

Complaints came back from potential customers: American business representatives knew little of the customs in countries where they hoped to make sales. Look, in contrast, at what the Japanese accomplished by studying the American auto market and then making inroads with fuel-efficient, dependable, and stylish cars at reasonable prices. It is a success story based in part on knowledge of trends and tastes in a nation—the United States—a third of the way around the globe.

Just as Japanese auto—and electronics—makers adopted American manufacturing and marketing techniques to crack the American market, learning more about the world can make us more competitive. It took an American born in the Netherlands to notice that the eels swimming in the Potomac River had more potential than ending up as inexpensive crab bait. Soon he was flying eels across the Atlantic to help satisfy the demand of European gourmets.

To compete in world markets, producers cannot rely on the odd chance that they may have specialized knowledge. Suppose farmers on the Delmarva Peninsula tried to compete effectively in the international market for fresh produce. Do Saudi Arabians like asparagus? Fresh? Do they already grow it? Would they pay a premium for it? Such questions apply in manufacturing and services markets as well as in agriculture.

Geographic knowlege is practical knowledge, and a listing of



Spread across the globe (above), the Society's 10.5 million members share a curiosity about one another and the world in which we live. This curiosity is answered by the Society's four magazines, books, television films, maps, and educational materials, which entertain and inform from childhood through old age. Through agreements with foreign publishers, a growing number of these products are also being translated into such languages as Italian, Swedish, Chinese, and Japanese.

NGS CARTOGRAPHIC DIVISION

a region's cultural practices can be just as important in a computer-maintained data base as a list of shipping rates and banking regulations. In the new era of "What's next?" for the Society, I see nothing inherently wrong with our branching out into providing information related to economic geography.

There are, of course, far more serious matters to address than outlets for products. We on planet earth face sobering environmental problems that our Society's founders could not have imagined. While some among them were concerned about the loss of American forests to timber cutting, they could hardly have credited the importance we now attach to the world's fast-disappearing tropical rain forests.

THE FOUNDERS' TIME was one of reclaiming land by draining swamps; ours is a time of realizing the value of wetlands even as their numbers and extent decline. Theirs was a time of great improvements in city water and sanitation systems; ours is a time of hazardous wastes and air pollution reaching even the most isolated locations in the world.

Theirs was a time when the far reaches of the globe seemed remote. Ours is a time when many of the most serious problems related to geography proclaim: *There are no distant places.* What could be more basic to geography than trying to understand the alteration

of climate by the greenhouse gases—or the depletion of the ozone layer that protects life from the sun's most dangerous ultraviolet rays? Both problems are caused by the release of gases from human activity. Both require massive changes in the materials we use and the fuels we burn to avert eventual disaster.

As you will discover in this index, the Society and its magazine have tried to stay on top of environmental crises for generations. You can find a listing for an article called "Saving the Forests," published in 1907. Another on pollution of the Potomac River is dated 1897. The possibility of future petroleum shortages was first addressed in the February 1920 issue.

We will have to do even more in the future in all our Society's programs and media. The depredations to our planet are not going to disappear easily or soon. Whole patterns of consumption may have to change. What will happen in this age of information when the people of Africa and Asia fully realize that the developed world controls 80 percent of earth's resources—though it contains about a quarter of the population?

That question cannot now be answered. But it is within the mission of the National Geographic Society to raise such questions, so that we can all think about alternative futures before a time without choice is upon us.

It is not within the scope of this Society's charter to become an advocate of one course or another. But we are going to report information as the facts warrant and through whatever media are the most appropriate. Sometimes the information will be disturbing, but as it affects all of us and our world, we call such reporting the responsible diffusion of geographic information.

I expect an index like this one will, a hundred years hence, be rife with stories about how the world dealt with environmental problems and social inequities. Those concerns will doubtless change over time, and such an index, or its bicentennial equivalent, may itself be vastly different.

TECHNOLOGY RUSHES ON. Instantaneous transmission of photographic images from the field to our headquarters is already very near. Film itself may soon become largely a matter of antiquarian interest. Our presses run faster all the time, even as printing quality improves. Yet someday the presses may stop. Direct transfer by laser of images to pages is on the horizon, and no one knows what is over that horizon.

Future Society members may receive an electronic module that they can insert into a device to display still or moving images, to hear sounds of human and other voices, and to display text or retrieve it in some new equivalent of printing.

We recognize that, like those who went before us, we must adjust to changing times and developing technologies. We welcome the next "What's next?" We will do what is necessary to assure that our mission and message will be renewed down the decades of the Society's second century.

From the crocodiles of Ethiopia to the Baka Pygmies of Cameroon, the cameras of the Society's Television Division cover it all. Our one-hour Specials, appearing since 1965, are among the most honored documentaries ever broadcast. Since the 1985 debut of National Geographic EXPLORER, a weekly two-hour, magazine-format program on cable, the Society has increased its programming to a hundred hours a year. Films from both EXPLORER and the Specials have also been released as videos.

JONATHAN BLAIR (LEFT); LISA SILCOCK, DJA RIVER FILMS

In the Waiting Room

In Worcester, Massachusetts,
I went with Aunt Consuelo
to keep her dentist's appointment
and sat and waited for her
in the dentist's waiting room.
It was winter. It got dark
early. The waiting room
was full of grown-up people,
arctics and overcoats,
lamps and magazines.
My aunt was inside
what seemed like a long time
and while I waited I read
the *National Geographic*
(I could read) and carefully
studied the photographs:
The inside of a volcano,
black, and full of ashes;
then it was spilling over
in rivulets of fire.
Osa and Martin Johnson
dressed in riding breeches,
laced boots, and pith helmets.
A dead man slung on a pole
—"Long Pig," the caption said.
Babies with pointed heads
wound round and round with string;
black, naked women with necks
wound round and round with wire
like the necks of light bulbs.
Their breasts were horrifying.
I read it right straight through.
I was too shy to stop.
And then I looked at the cover:
the yellow margins, the date.

Suddenly, from inside,
came an *oh!* of pain
—Aunt Consuelo's voice—
not very loud or long.
I wasn't at all surprised;
even then I knew she was
a foolish, timid woman.
I might have been embarrassed,
but wasn't. What took me
completely by surprise
was that it was *me:*
my voice, in my mouth.
Without thinking at all
I was my foolish aunt,
I—we—were falling, falling,
our eyes glued to the cover
of the *National Geographic,*
February, 1918.

I said to myself: three days
and you'll be seven years old.
I was saying it to stop
the sensation of falling off
the round, turning world
into cold, blue-black space.
But I felt: you are an *I,*
you are an *Elizabeth,*
you are one of *them.*
Why should you be one, too?
I scarcely dared to look
to see what it was I was.
I gave a sidelong glance
—I couldn't look any higher—
at shadowy gray knees,
trousers and skirts and boots
and different pairs of hands
lying under the lamps.
I knew that nothing stranger
had ever happened, that nothing
stranger could ever happen.

Why should I be my aunt,
or me, or anyone?
What similarities—
boots, hands, the family voice
I felt in my throat, or even
the *National Geographic*
and those awful hanging breasts—
held us all together
or made us all just one?
How—I didn't know any
word for it—how "unlikely"...
How had I come to be here,
like them, and overhear
a cry of pain that could have
got loud and worse but hadn't?

The waiting room was bright
and too hot. It was sliding
beneath a big black wave,
another, and another.

Then I was back in it.
The War was on. Outside,
in Worcester, Massachusetts,
were night and slush and cold,
and it was still the fifth
of February, 1918.

From *The Complete Poems 1927-1979* by Elizabeth Bishop; © 1979, 1983 by Alice Helen Methfessel. Reprinted by permission of Farrar, Straus and Giroux, Inc.

PAINTING BY JAMES M. GURNEY

STATE
THE NATIONAL GEOGRAPHIC MAGAZINE
100 Years
Reporting on the world and all that's in it

January 13, 1888
Thirty-three founders—scientists, scholars, military men—meet at the Cosmos Club, then on Lafayette Square in Washington, D.C., to create "a society for the increase and diffusion of geographic knowledge."

October 1888
The first issue of NATIONAL GEOGRAPHIC magazine is sent to 165 charter members.

October 1889
The magazine publishes its first map supplement, showing the Asheville, North Carolina, area.

1890-91
The first National Geographic Society-sponsored expedition maps the Mount St. Elias region, in Alaska, and discovers Canada's highest peak, which the team names Mount Logan.

January 7, 1898
Alexander Graham Bell assumes National Geographic Society's presidency.

April 1, 1899
Gilbert Hovey Grosvenor joins the staff as Assistant Editor.

February 1903
Gilbert H. Grosvenor is appointed Editor of NATIONAL GEOGRAPHIC.

Fall 1903
The National Geographic Society moves to a new headquarters in Washington, D.C., built with donations given by the family of first Society President, Gardiner Greene Hubbard.

January 1905
Gilbert H. Grosvenor fills 11 pages of the magazine with photographs of Lhasa in Tibet. Expecting to be fired, he is instead congratulated by Society members.

July 1906
Grosvenor publishes George Shiras 3d's pioneering flash photographs of animals at night. Two Society board members resign, claiming the magazine is turning into a "picture book."

April 1909
Leader of a Society-supported expedition, Robert E. Peary claims to be the first to reach the North Pole.

February 1910
The magazine adopts a cover design whose border is adorned with oak and laurel leaves, acorns, and four hemispheres.

November 1910
The GEOGRAPHIC publishes 24 pages of hand-tinted photographs, William W. Chapin's "Scenes in Korea and China," far more than any other magazine had published.

1912-15
Society-supported expeditions in the Peruvian Andes led by Hiram Bingham clear and excavate Machu Picchu, lost mountaintop city of the Inca.

1915
The Cartographic Division is established to increase production of maps under direct Society control.

1916
In a Society-sponsored expedition Robert F. Griggs discovers, names, and explores the Valley of Ten Thousand Smokes in a volcanic region near Mount Katmai, Alaska. Within two years a million acres is set aside as Katmai National Monument.

May 1918
"Map of the Western Theatre of War" is published, a tour de force of detailed cartography.

1919
National Geographic *School Bulletin* begins publication.

1920
Gilbert H. Grosvenor becomes President of the Society, a post he is to hold for 34 years.

January 1927
The magazine publishes the first natural-color underwater photographs, taken by staff photographer Charles Martin and scientist W. H. Longley.

November 29, 1929
Richard E. Byrd is the first to fly over the South Pole; he photographs 160,000 square miles of Antarctica from the air.

1930
Melville Bell Grosvenor makes the first natural-color aerial photographs to be published.

April 1931-February 1932
Staff writer-photographer Maynard Owen Williams joins the Citroën-Haardt expedition across Asia from the Mediterranean to the Yellow Sea.

August 15, 1934
In a Society-sponsored investigation, William Beebe and Otis Barton descend in a bathysphere to a record depth of 3,028 feet in the sea off Bermuda.

November 11, 1935
Backed by the Society, U.S. Army Air Corps Capts. Albert W. Stevens and Orvil A. Anderson ascend in the stratospheric balloon *Explorer II* to a record 72,395 feet.

1938-1946
Matthew W. Stirling leads Society-sponsored expeditions that uncover thousand-year-old La Venta, an Olmec site in southern Mexico.

1941
The Society opens its storehouse of photographs, maps, and other cartographic data to President Roosevelt and the U.S. armed forces to aid war efforts.

July 1942
The first cover illustration appears, a U.S. flag.

October 1952
The magazine publishes the first of many articles on undersea exploration by Jacques-Yves Cousteau.

May 1954
John Oliver La Gorce is elected President and Editor.

May 1956
Monumental National Geographic Society-Palomar Observatory Sky Survey is completed—and remains an important basic resource of astronomers.

January 1957
Melville Bell Grosvenor becomes President and Editor.
Luis Marden of the foreign editorial staff finds the 167-year-old remains of the British armed merchant vessel *Bounty* off Pitcairn Island.
The Society's modern Book Service is inaugurated with *The World in Your Garden.*

September 1959
Color photographs begin to appear regularly on the GEOGRAPHIC's cover.

September 1960
The Society reports on fossil remains of a hominid that lived in Africa more than 1.75 million years ago. Called *Zinjanthropus* by discoverers Louis and Mary Leakey, the find opens a new era in paleoanthropology.

1961
A National Geographic Society grant assists Jane Goodall in her study of chimpanzees in Tanzania's Gombe National Park.

May 1961
The Society's first political globe is introduced.

June 1962
John Glenn carries a National Geographic Society flag on the first manned U.S. orbital space flight.
The Society publishes the official White House guidebook, first in a series of public-service books.

May 1963
First Americans attain the summit of Mount Everest in a Society-supported expedition.

June 1963
The first bound *Atlas of the World* is published.

Summer 1963
A National Park Service study to save redwoods is funded by a Society grant. The survey aids establishment of Redwood National Park in California.
Society-sponsored investigation finds evidence in Newfoundland of Norse settlement in North America five centuries before Columbus.

January 18, 1964
New ten-story headquarters building in Washington, D.C., is dedicated by President Lyndon B. Johnson.

July 1965
The Special Publications Division is established.

September 10, 1965
"Americans on Everest" inaugurates a series of hour-long National Geographic Television Specials, first shown on CBS.

1967
Dian Fossey begins a Society-funded study of mountain gorillas in Rwanda.
Frederick G. Vosburgh named Editor.
Ocean-floor relief-map series is instituted.

1968
Society membership exceeds six million, having increased nearly threefold in a decade.

January 1968
First Society-produced filmstrips offered as educational tools for schools.

October 1968
More than a thousand employees move into a new Membership Center Building in Gaithersburg, Maryland.

February 1969
The Cartographic Division produces the first map to show the entire lunar surface on a single sheet.

July 1969
Apollo 11 astronauts carry National Geographic Society flag to the moon.

June 1970
Gilbert M. Grosvenor is elected Editor.
Traveler's map supplements begun.

March 1971
First ethnic magazine supplement map, "The Peoples of Mainland Southeast Asia," launches political and cultural map series.

September 1975
National Geographic WORLD replaces the *School Bulletin* as the magazine for young people. Circulation reaches 1.3 million by 1976.

October 28, 1975
The Society begins a series of Specials on public television with "The Incredible Machine," about the human body. It becomes the most widely watched program ever shown on PBS.

Fall 1975
In anticipation of the nation's Bicentennial, the Book Service publishes *We Americans*. By early 1989 more than 1.2 million copies of the Society's all-time best-selling book had been printed.

Summer 1977
Magazine printing changes to gravure presses in Mississippi.

April 1979
Mary Leakey reports discovery of 3.6-million-year-old footprints in the volcanic ash of a riverbed in Tanzania. They are from upright-walking ancestors of modern humans.

August 1980
Wilbur E. Garrett becomes the magazine's Editor, succeeding Gilbert M. Grosvenor, who becomes President.

February 1981
A Special Report on Energy is published as a 13th issue of the magazine and sent without cost to Society members.

December 1982
The magazine details discovery of skeletons unearthed at Herculaneum, a Roman town buried with Pompeii in the A.D. 79 eruption of Mount Vesuvius.

1984
Undersea archaeological pioneer George F. Bass, supported by the Society, discovers in a 3,400-year-old wrecked ship off the coast of southern Turkey the most extensive collection of Bronze Age trade goods yet found.

March 1984
A holographic image of an eagle appears on NATIONAL GEOGRAPHIC's cover, pioneering the use of holograms in large-circulation magazines.
NATIONAL GEOGRAPHIC TRAVELER, a magazine devoted to educational and practical aspects of travel, is launched.

June 19, 1984
A seven-story addition to the Society's headquarters complex is dedicated by President Ronald Reagan.

Winter 1985
A quarterly scholarly journal, NATIONAL GEOGRAPHIC RESEARCH, is begun to convey findings of Society-sponsored and other research projects.

April 7, 1985
The EXPLORER series has its premier on cable television; it becomes a two-hour weekly feature on SuperStation TBS in 1986.

April 1985
The Geography Education Program is initiated to emphasize the importance of geography's role in the modern world and to improve its instruction, especially in public schools.

September 11, 1985
Details of the discovery of R.M.S. *Titanic* announced at Society headquarters by Robert D. Ballard.

May 1, 1986
Six members of the Steger International Polar Expedition—including one woman—are the first to reach the North Pole by dogsled without resupply since Peary's attempt.

October 1986
Senior Associate Editor Joseph Judge reports that six lines of evidence point to Samana Cay in the Bahamas as the first landfall of Christopher Columbus in the New World.

October 1987
Results of a smell test—largest scientific survey of its kind, which appeared in the September 1986 NATIONAL GEOGRAPHIC—are published.
The magazine is sent to 10.5 million members.

January 1988
The National Geographic Society Education Foundation is established to raise funds and provide grants for geography education. Initial funding is 20 million dollars with another 20 million dollars available to match contributions from other sources.

April 1988
The magazine reports discovery and publishes photographs of a 4,600-year-old boat entombed in a pit beside the Great Pyramid of Khufu in Giza, Egypt.

October 1988
New monthly Geographica section, illustrated with photographs and maps, is launched in the magazine; it includes geographic news briefs and updates of previous stories.

Fall 1988
The magazine celebrates the centennial of the Society with four special issues highlighting its history, the peopling of the earth, exploration, and the environment.
The December cover is made up entirely of holographic images.

A B

AFRICA
AIR SHOWS
ALASKA
AMAZON BASIN
AMERICAN REVOLUTION
ANDES
ANIMAL INTRODUCTION
ANTARCTIC REGIONS
APOLLO MISSIONS
APPALACHIAN TRAIL
ARABIAN DESERT
ARCHAEOLOGY
ARCTIC REGIONS
ART
ASTRONAUTS
ATOCHA
AUSTRALIA
AVALANCHES
AZTECS
BABOONS
BALD EAGLES
ROBERT D. BALLARD
BALLOONS
BANGKOK
BANGLADESH
BAYEUX TAPESTRY
BEDOUIN
ALEXANDER GRAHAM BELL
BIOCHEMICAL RESEARCH
BIOGRAPHIES
BLACK AMERICANS
BLACK HOLES
BLUE CRABS
BOOKS
BOUNTY
BRONZE AGE
BUDDHISM
BUSHMEN

Maneuvering on skis, two adventurers press on during their trek around Alaska's Mount McKinley.

NED GILLETTE

AAFTTC. *See* Army Air Forces Training Command

ABACO (Island), Bahama Islands:
The Loyalists. By Kent Britt. Photos by Ted Spiegel. 510-539, *Apr. 1975*

ABAIANG (Atoll), Gilbert Islands:
Gilbert Islands in the Wake of Battle. By W. Robert Moore. 129-162, *Feb. 1945*

ABALONE:
Goggle Fishing in California Waters. By David Hellyer. Photos by Lamar Boren. 615-632, *May 1949*

ABBE, CLEVELAND:
Board of Managers. 165, Apr. 1889; 270, July 1889; 68, *Apr. 1890*

ABBEY, EDWARD: *Author*
Guadalupe's Trails in Summer (Guadalupe Mountains National Park, Texas). 135-141, *July 1979*

ABBOT, C. G.: *Author*
Hunting an Observatory: A Successful Search for a Dry Mountain on Which to Establish the National Geographic Society's Solar Radiation Station. 503-518, *Oct. 1926*
Measuring the Sun's Heat and Forecasting the Weather: The National Geographic Society to Maintain a Solar Station in a Remote Part of the World to Coöperate with Smithsonian Institution Stations in California and Chile. 111-126, *Jan. 1926*
Do Volcanic Explosions Affect Our Climate? 181-198, *Feb. 1913*

ABBOT, J. LLOYD, Jr.: *Author*
Flight Into Antarctic Darkness. Photos by David S. Boyer. 732-738, *Nov. 1967*

ABBOT, JOHN M.: *Author*
The Buried City of Ceylon. 613-622, *Nov. 1906*

ABBOTSBURY SWANNERY, England:
The Swans of Abbotsbury. By Michael Moynihan. Photos by Barnet Saidman. 563-570, *Oct. 1959*

ABBOTT RANCH, Cherry County, Nebraska:
Land of Long Sunsets: Nebraska's Sand Hills. By John Madson. Photos by Jodi Cobb. 493-517, *Oct. 1978*

ABDUL AZIZ AL SAUD (King of Saudi Arabia). *See* Al Saud, Abdul Aziz

ABDUL GHAFUR:
Author-Photographer
From America to Mecca on Airborne Pilgrimage. 1-60, *July 1953*

ABDUL-RAUF, MUHAMMAD:
Author
Pilgrimage to Mecca. Photos by Mehmet Biber. 581-607, *Nov. 1978*

ABELL, GEORGE O.: *Author*
Exploring the Farthest Reaches of Space. 782-790, *Dec. 1956*

ABELL, PAUL:
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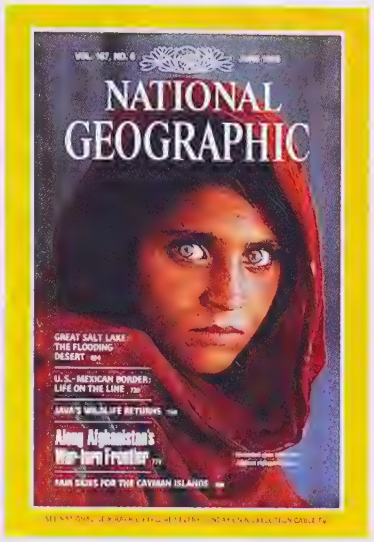
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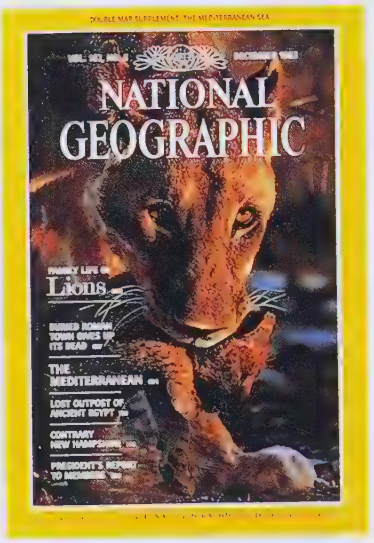

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Amid the warmth of family ties, Eskimos fashion goods of ivory and reindeer hide in the early 1900s for life in the Arctic. GEORGE R. KING

ALASKA KING CRAB:
The Crab That Shakes Hands. By Clarence P. Idyll. Photos by Robert F. Sisson. 254-271, *Feb. 1971*

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Alaskan Highway an Engineering Epic: Mosquitoes, Mud, and Muskeg Minor Obstacles of 1,671-mile Race to Throw the Alcan Life Line Through Thick Forests and Uninhabited Wilderness. By Froelich Rainey. 143-168, *Feb. 1943*

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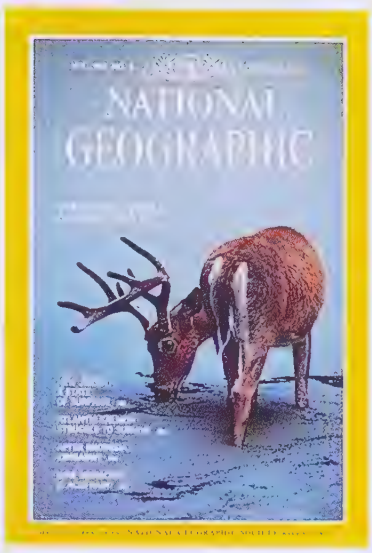

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A woman swathed in blue belongs to the nomadic Reguibat tribe of the Sahara, people of Arab and Berber stock. JONATHAN BLAIR

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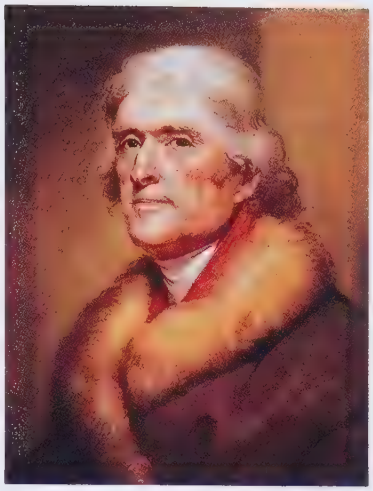

Thomas Jefferson: architect of the Declaration of Independence, philosopher, scientist, and President.

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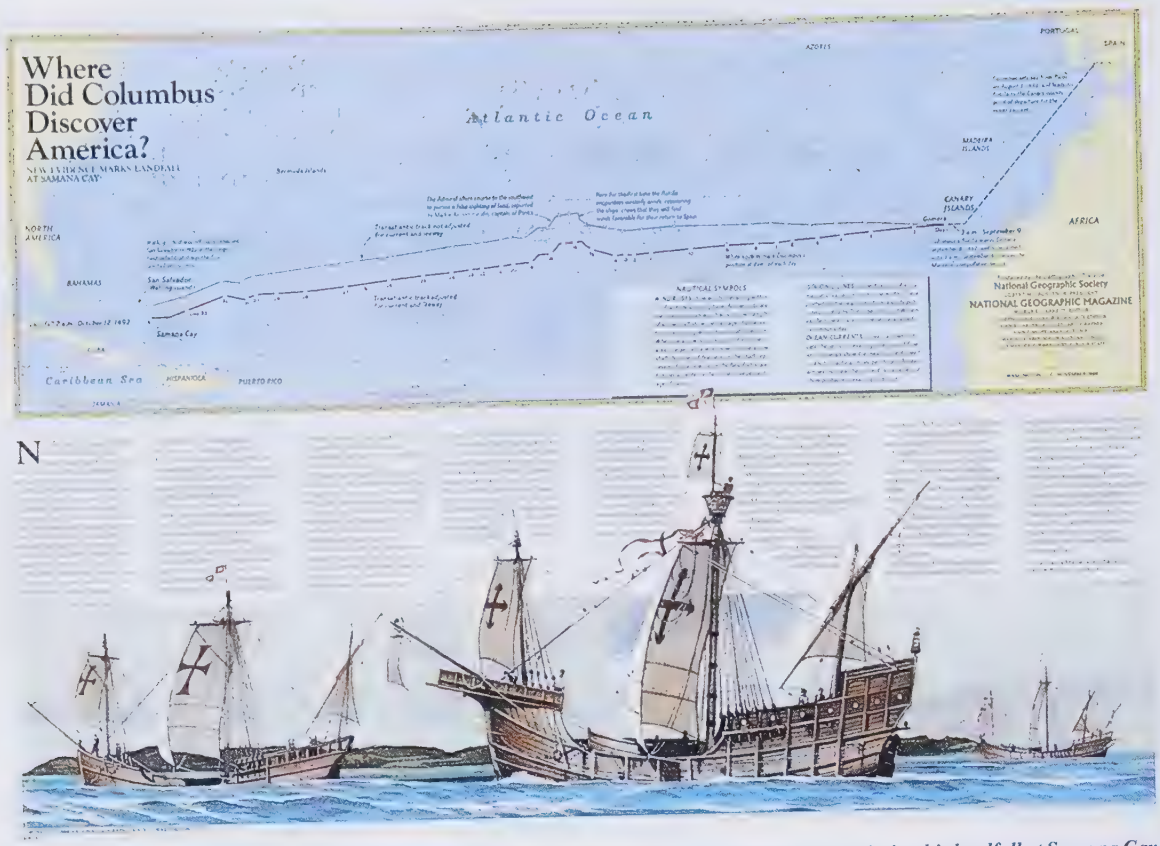

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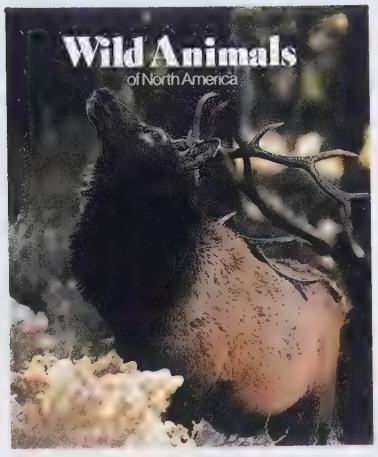

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Sculptured pendentives once supported the dome of the Antigua, Guatemala, cathedral, shattered by a 1773 earthquake. LUIS MARDEN, NGS

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Light seems to suspend maple leaves resting on a mossy boulder on Mount Washington, New Hampshire. SAM ABELL

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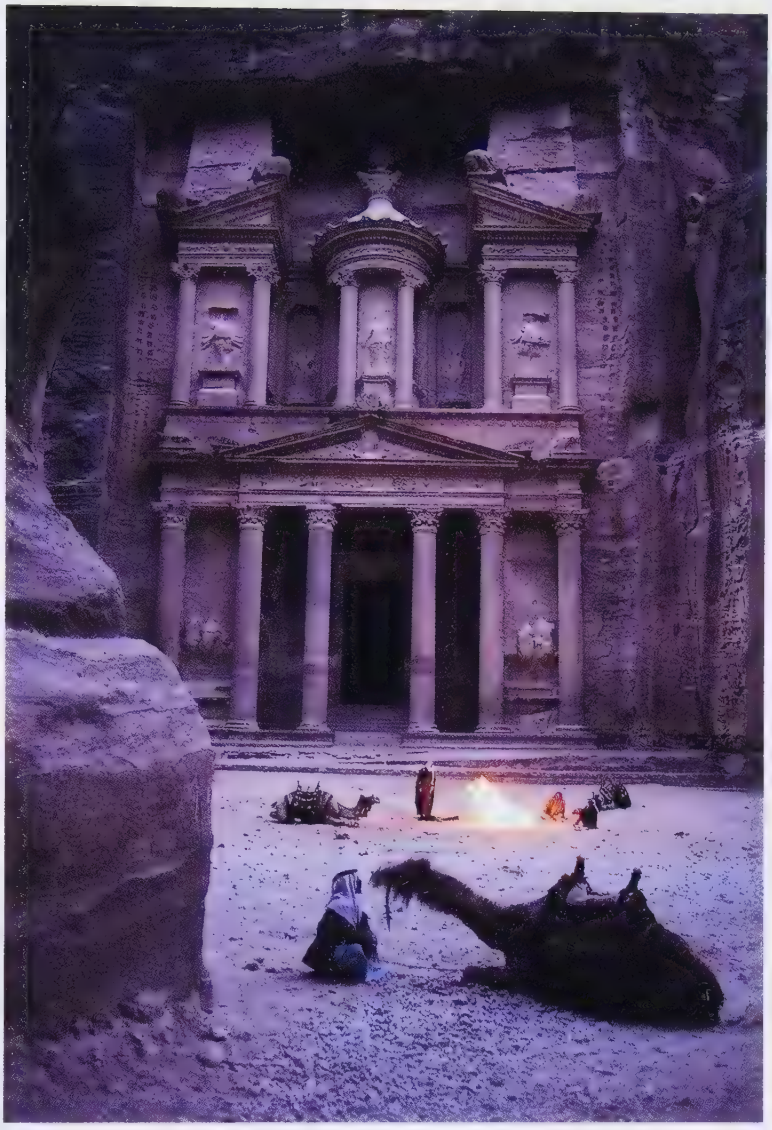

Travelers from Jordan's desert warm themselves before a Nabataean temple or tomb at the ancient city of Petra. THOMAS J. ABERCROMBIE, NGS

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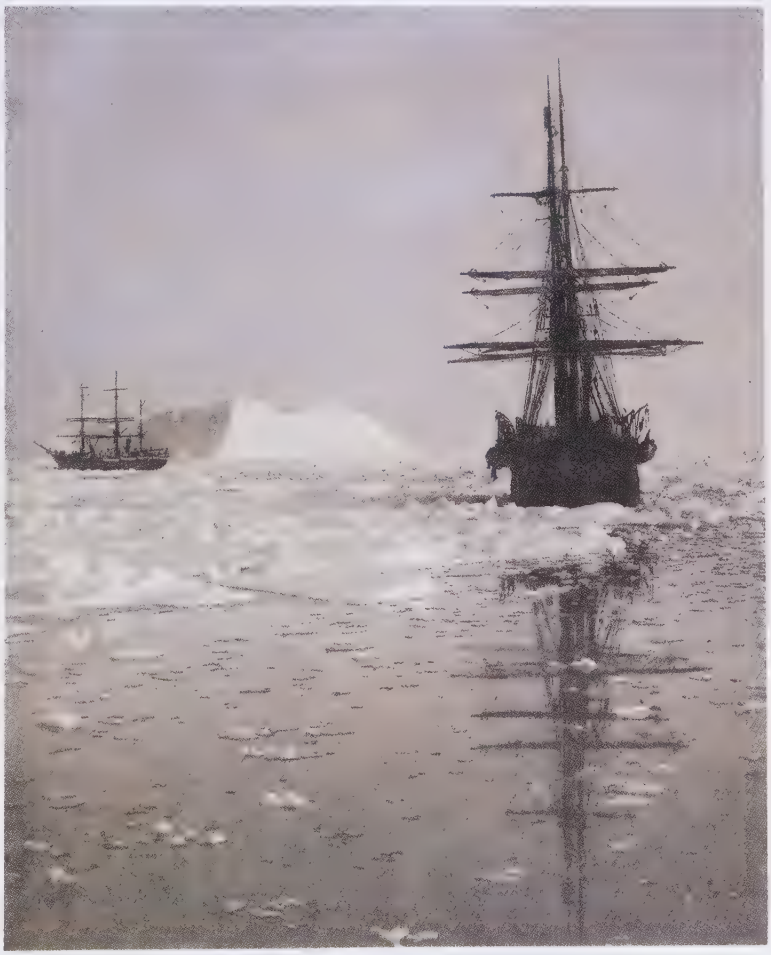

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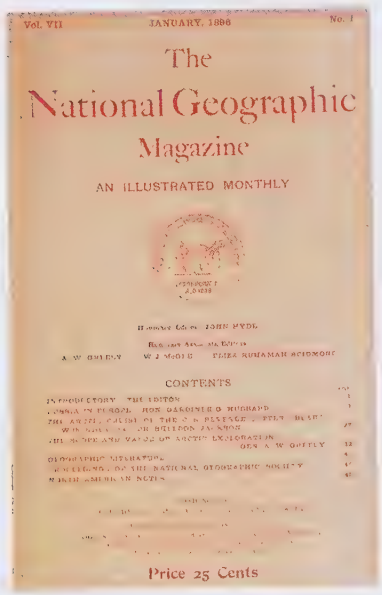

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A jack-in-the-box fright reflex propels an alarmed armadillo three feet into the air during a night's forage. BIANCA LAVIES

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America's First Painters: Indians. By Dorothy Dunn. 349-377, *Mar. 1955*

U. S. Capitol, Citadel of Democracy. By Lonnelle Aikman. 143-192, *Aug. 1952*

American Processional: History on Canvas. By John and Blanche Leeper. 173-212, *Feb. 1951*

American Masters in the National Gallery. By John Walker. 295-324, *Sept. 1948*

Artists Look at Pennsylvania. By John Oliver La Gorce. 37-56, *July 1948*

See also Pre-Hispanic, *following*

American Indian

Canada's Queen Charlotte Islands, Homeland of the Haida. By Moira Johnston. Photos by Dewitt Jones. 102-127, *July 1987*

Ancient European

Art Treasures from the Ice Age: Lascaux Cave. By Jean-Philippe Rigaud. Photos by Sisse Brimberg and Norbert Aujoulat. 482-499, *Oct. 1988*

The Eternal Etruscans. By Rick Gore. Photos by O. Louis Mazzatenta. Painting by James M. Gurney. 696-743, *June 1988*

Ancient Bulgaria's Golden Treasures. By Colin Renfrew. Photos by James L. Stanfield. Paintings by Jean-Leon Huens. 112-129, *July 1980*

Ancient Europe Is Older Than We Thought. By Colin Renfrew. Photos by Adam Woolfitt. 615-623, *Nov. 1977*

The Celts. By Merle Severy. Photos by James P. Blair. Paintings by Robert C. Magis. 582-633, *May 1977*

Exploring the Mind of Ice Age Man. By Alexander Marshack. NGS research grant. 64-89, *Jan. 1975*

Lascaux Cave, Cradle of World Art. By

Norbert Casteret. Photos by Maynard Owen Williams. Contents: La Baume Ladrone, La Henne Morte, La Mouthe, Lascaux, Montespan, Niaux, Trois Frères, Tuc D'Audoubert, in France; and Altamira in Spain. 771-794, *Dec. 1948*

Arctic

Where Magic Ruled: Art of the Bering Sea. By William W. Fitzhugh and Susan A. Kaplan. Photos by Sisse Brimberg. 198-205, *Feb. 1983*

Eskimo and Viking Finds in the High Arctic: Ellesmere Island. By Peter Schledermann. Photos by Sisse Brimberg. 575-601, *May 1981*

Asian

Focus on India: Festivals Across U. S. Celebrate a Diverse Culture. By John J. Putman. 460-461, *Apr. 1985*

Indonesia Rescues Ancient Borobudur. By W. Brown Morton III. Photos by Dean Conger. 126-142, *Jan. 1983*

The Temples of Angkor. 548-589. I. Ancient Glory in Stone. By Peter T. White. Photos by Wilbur E. Garrett. 552-589; II. Will They Survive? Introduction by Wilbur E. Garrett. 548-551. *May 1982*

Pagan, on the Road to Mandalay. By W. E. Garrett. 343-365, *Mar. 1971*

Angkor, Jewel of the Jungle. By W. Robert Moore. Paintings by Maurice Fiévet. 517-569, *Apr. 1960*

See also Byzantine; Chinese; Islamic; Japanese; Middle Eastern, *following*

Byzantine

The Byzantine Empire. 709-777. I. Rome of the East. By Merle Severy. Photos by James L. Stanfield. 709-767; II. Mount Athos. 739-745; III. Eternal Easter in a Greek Village. By Maria Nicolaidis-Karanikolas. Photos by James L. Stanfield. 768-777, *Dec. 1983*

Island of Faith in the Sinai Wilderness (St. Catherine's Monastery). By George H. Forsyth. Photos by Robert F. Sisson. 82-106, *Jan. 1964*

Mount Sinai's Holy Treasures (St. Catherine's Monastery). By Kurt Weitzmann. Photos by Fred Anderegg. 109-127, *Jan. 1964*

A New Look at Medieval Europe. By Kenneth M. Setton. Paintings by Andre Durenceau and Birney Lettick. 799-859, *Dec. 1962*

Ivory head was preserved at the bottom of a well in Assyrian king Ashurnasirpal II's palace in Nimrud, Iraq. STEVE MCCURRY

Athens to Istanbul. By Jean and Franc Shor. 37-76, *Jan. 1956*

Chinese

China's Incredible Find. By Audrey Topping. Paintings by Yang Hsien-min. Included: The first emperor's burial mound, with guardian army of terra-cotta men and horses. 440-459, *Apr. 1978*

China Unveils Her Newest Treasures. Photos by Robert W. Madden. 848-857, *Dec. 1974*

A Lady From China's Past. Photos from *China Pictorial*. Text by Alice J. Hall. Included: Treasures from a noblewoman's tomb. 660-681, *May 1974*

Mukden, the Manchu Home, and Its Great Art Museum. By Eliza R. Scidmore. 289-320, *Apr. 1910*

Egyptian

Lost Outpost of the Egyptian Empire. By Trude Dothan. Photos by Sisse Brimberg. Paintings by Lloyd K. Townsend. NGS research grant. 739-769, *Dec. 1982*

Egypt: Legacy of a Dazzling Past. By Alice J. Hall. 293-311, *Mar. 1977*

Computer Helps Scholars Re-create an Egyptian Temple. By Ray Winfield Smith. Photos by Emory Kristof. NGS research grant. 634-655, *Nov. 1970*

Abu Simbel's Ancient Temples Reborn. By Georg Gerster. 724-744, *May 1969*

Saving the Ancient Temples at Abu Simbel. By Georg Gerster. Paintings by Robert W. Nicholson. 694-742, *May 1966*

Yankee Cruises the Storied Nile. By Irving and Electa Johnson. Photos by Winfield Parks. 583-633, *May 1965*

Threatened Treasures of the Nile. By Georg Gerster. 587-621, *Oct. 1963*

Tutankhamun's Golden Trove. By Christiane Desroches Noblecourt. Photos by F. L. Kenett. 625-646, *Oct. 1963*

Fresh Treasures from Egypt's Ancient Sands. By Jefferson Caffery. Photos by David S. Boyer. 611-650, *Nov. 1955*

Life, Culture, and History of the Egyptians. Paintings by H. M. Herget. 436-514, *Oct. 1941*

European

Treasures of the Vatican. Photos by James L. Stanfield and Victor R. Boswell, Jr. 764-775, *Dec. 1985*

The Great Good Places: English Country Houses. By Mark Girouard. Photos by Fred J. Maroon. 658-694, *Nov. 1985*

The Dead Do Tell Tales at Vesuvius. By Rick Gore. Photos by O. Louis Mazzatenta. NGS research grant. 557-613, *May 1984*

Toledo–El Greco's Spain Lives On. By Louise E. Levathes. Photos by James P. Blair. Included: The Genius of El Greco. Introduction by J. Carter Brown. 726-753, *June 1982*

Belgium: One Nation Divisible. By James Cerruti. Photos by Martin Rogers. Included: Flemish oil-painting techniques. 314-341, *Mar. 1979*

The Louvre, France's Palace of the Arts. By Hereward Lester Cooke, Jr. 796-831, *June 1971*

The National Gallery After a Quarter Century. By John Walker. 348-371, *Mar. 1967*

The Kress Collection: A Gift to the Nation. By Guy Emerson. 823-865, *Dec. 1961*

Unrolled by photography, a painting on a tomb vase depicts a Maya ruler peering into an obsidian mirror. DUMBARTON OAKS

Periscope on the Etruscan Past. By Carlo M. Lerici. 337-350, *Sept. 1959*
The Nation's Newest Old Masters (National Gallery of Art). By John Walker. Paintings from Kress Collection. 619-657, *Nov. 1956*
Your National Gallery of Art After 10 Years. By John Walker. Paintings from Kress Collection. 73-103, *Jan. 1952*
The Vienna Treasures and Their Collectors. By John Walker. 737-776, *June 1950*
The British Way. By Sir Evelyn Wrench. Included: William Hogarth, Hans Holbein, Sir Edwin Landseer, Sir Joshua Reynolds, Benjamin West. 421-541, *Apr. 1949*
Our Search for British Paintings. By Franklin L. Fisher. 543-550, *Apr. 1949*
Masterpieces on Tour. By Harry A. McBride. 717-750, *Dec. 1948*
Europe's Looted Art. By John Walker. 39-52, *Jan. 1946*
Old Masters in a New National Gallery. By Ruth Q. McBride. 1-50, *July 1940*
The Smallest State in the World: Vatican City on Its 108 Acres Is a Complete Sovereignty Internationally Recognized. By W. Coleman Nevils. 377-412, *Mar. 1939*
See also Aegean; Ancient Europe; Byzantine, *preceding;* Greek; Impressionist; Medieval; Modern Art; Renaissance; Roman, *following*

Greek
Warriors From a Watery Grave (Bronze Sculptures). By Joseph Alsop. 821-827, *June 1983*
Regal Treasures From a Macedonian Tomb. By Manolis Andronicos. Photos by Spyros Tsavdaroglou. 55-77, *July 1978*
Athens: Her Golden Past Still Lights the World. By Kenneth F. Weaver. Photos by Phillip Harrington. 100-137, *July 1963*

Impressionist
In Quest of Beauty. By Paul Mellon. 372-385, *Mar. 1967*
Great Masters of a Brave Era in Art. By Hereward Lester Cooke, Jr. 661-697, *May 1961*

Islamic
Saudi Arabia: The Kingdom and Its Power. By Robert Azzi. 286-333, *Sept. 1980*
Glass Treasure From the Aegean. By George F. Bass. Photos by Jonathan Blair. NGS research grant. 768-793, *June 1978*
Iran: Desert Miracle. By William Graves. Photos by James P. Blair. 2-47, *Jan. 1975*
The Sword and the Sermon. By Thomas J. Abercrombie. 3-45, *July 1972*
Iran's Shah Crowns Himself and His Empress. By Franc Shor. Photos by James L. Stanfield and Winfield Parks. 301-321, *Mar. 1968*
Saudi Arabia: Beyond the Sands of Mecca. By Thomas J. Abercrombie. 1-53, *Jan. 1966*
The Arab World. 712-732, *Nov. 1958*
See also Mosques

Art lovers in the Louvre pass in a blur before "Venus de Milo," one of the Paris museum's masterpieces. BRUCE DALE, NGS

Japanese
The Lost Fleet of Kublai Khan. By Torao Mozai. Photos by Koji Nakamura. Paintings by Issho Yada. 634-649, *Nov. 1982*
Kyoto and Nara: Keepers of Japan's Past. By Charles McCarry. Photos by George F. Mobley. 836-851, *June 1976*
Human Treasures of Japan. By William Graves. Photos by James L. Stanfield. Contents: Ryujo Hori, doll maker; Gonroku Matsuda, lacquer artist; Tesshi Nagano, ironcaster; Utaemon Nakamura, Kabuki actor; Sadaichi Tsukiyama, samurai swordsmith. 370-379, *Sept. 1972*

Medieval
Searching Out Medieval Churches in Ethiopia's Wilds. By Georg Gerster. 856-884, *Dec. 1970*
Chartres: Legacy From the Age of Faith. By Kenneth MacLeish. Photos by Dean Conger. 857-882, *Dec. 1969*
900 Years Ago: the Norman Conquest. By Kenneth M. Setton. Photos by George F. Mobley. The complete Bayeux Tapestry photographed by Milton A. Ford and Victor R. Boswell, Jr. 206-251, *Aug. 1966*

Middle Eastern
Ebla: Splendor of an Unknown Empire. By Howard La Fay. Photos by James L. Stanfield. Paintings by Louis S. Glanzman. 730-759, *Dec. 1978*
The Phoenicians, Sea Lords of Antiquity. By Samuel W. Matthews. Photos by Winfield Parks. Paintings by Robert C. Magis. 149-189, *Aug. 1974*
Throne Above the Euphrates. By Theresa Goell. 390-405, *Mar. 1961*
Darius Carved History on Ageless Rock. By George G. Cameron. 825-844, *Dec. 1950*

Modern
The Fascinating World of Trash. By Peter T. White. Photos by Louie Psihoyos. 424-457, *Apr. 1983*
Pompidou Center, Rage of Paris. By Cathy Newman. Photos by Marc Riboud. 469-477, *Oct. 1980*
Chelsea, London's Haven of Individualists. By James Cerruti. Photos by Adam Woolfitt. 28-55, *Jan. 1972*
The National Gallery After a Quarter Century. By John Walker. 348-371, *Mar. 1967*

Pre-Columbian
Discovering the New World's Richest Unlooted Tomb. By Walter Alva. Photos by Bill Ballenberg. Included: Into the Tomb of a Moche Lord. Paintings by Ned Seidler; Iconography of the Moche: Unraveling the Mystery of the Warrior-Priest. By Christopher B. Donnan. NGS research grant. 510-555, *Oct. 1988*
Río Azul. Photos by George F. Mobley. I. Lost City of the Maya. By Richard E. W. Adams. Included: Realm of the Maya (map). 420-451; II. Looters Rob Graves and History. By Ian Graham. 452-461; III. In Defense of the Collector. By Gillett G. Griffin. 462-465. NGS research grant. 420-465, *Apr. 1986*
Maya Art Treasures Discovered in Cave. By George E. Stuart. Photos by Wilbur E. Garrett. Included: Inscriptions and paintings made 1,200 years ago in a remote cavern near Naj Tunich, Guatemala; Map: Sacred Signs in the Nether Regions. 220-235, *Aug. 1981*
The Aztecs. 704-775. I. The Aztecs. By Bart McDowell. Photos by David Hiser. Paintings by Felipe Dávalos. 714-751; II. The Building of Tenochtitlan. By Augusto F. Molina Montes. Paintings by Felipe Dávalos. 753-765; III. New Finds in the Great Temple. By Eduardo Matos Moctezuma. Photos by David Hiser. 767-775, *Dec. 1980*
The Maya. I. Children of Time. By Howard La Fay. Photos by David Alan Harvey. 729-767; II. Riddle of the Glyphs. By George E. Stuart. Photos by Otis Imboden. 768-791; III. Resurrecting the Grandeur of Tikal. By William R. Coe. 792-798; IV. A Traveler's Tale of Ancient Tikal. Paintings by Peter Spier. Text by Alice J. Hall. 799-811. NGS research grant. 729-811, *Dec. 1975*
Mystery of the Ancient Nazca Lines. By Loren McIntyre. NGS research grant. 716-728, *May 1975*
Gold, the Eternal Treasure. By Peter T. White. Photos by James L. Stanfield. 1-51, *Jan. 1974*
The Lost Empire of the Incas. By Loren McIntyre. Art by Ned and Rosalie Seidler. Included: A Pictorial Chronicle of the Incas. 729-787, *Dec. 1973*
Chan Chan, Peru's Ancient City of Kings. By Michael E. Moseley and Carol J. Mackey. Photos by David Brill. 318-345, *Mar. 1973*
Mexico's Window on the Past (National Museum). By Bart McDowell.

Photos by B. Anthony Stewart. 492-519, *Oct. 1968*
Giant Effigies of the Southwest. By George C. Marshall. 389, *Sept. 1952*
Mexico's Booming Capital. By Mason Sutherland. Photos by Justin Locke. 785-824, *Dec. 1951*
Indian Life Before the Colonists Came. By Stuart E. Jones. Engravings by Theodore de Bry, 1590. 351-368, *Sept. 1947*
Finding the Tomb of a Warrior-God. By William Duncan Strong. Photos by Clifford Evans, Jr. 453-482, *Apr. 1947*
On the Trail of La Venta Man. By Matthew W. Stirling. Photos by Richard H. Stewart. Included: Hunting Mexico's Buried Temples. 145-168. NGS research grant. 137-172, *Feb. 1947*

Renaissance

Restoration Reveals the "Last Supper." By Carlo Bertelli. Photos by Victor R. Boswell, Jr. 664-685, *Nov. 1983*
Carrara Marble: Touchstone of Eternity. By Cathy Newman. Photos by Pierre Boulat. 42-59, *July 1982*
Leonardo da Vinci: A Man for All Ages. By Kenneth MacLeish. Photos by James L. Amos. 296-329, *Sept. 1977*
The Renaissance Lives On in Tuscany. By Luis Marden. Photos by Albert Moldvay. 626-659, *Nov. 1974*
Venice Fights for Life. By Joseph Judge. Photos by Albert Moldvay. 591-631, *Nov. 1972*
When in Rome.... By Stuart E. Jones. Photos by Winfield Parks. 741-789, *June 1970*
The Renaissance: Maker of Modern Man. 402 pages. *1970*
Florence Rises From the Flood. By Joseph Judge. 1-43, *July 1967*
Escorting Mona Lisa to America. By Edward T. Folliard. 838-847, *June 1963*
"The Adoration of the Magi," painting supplement, *Jan. 1952*

Roman

Ancient Aphrodisias Lives Through Its Art. By Kenan T. Erim. Photos by David Brill. NGS research grant. 527-551, *Oct. 1981*
Down the Ancient Appian Way. By James Cerruti. Photos by O. Louis Mazzatenta. 714-747, *June 1981*
Aphrodisias, Awakened City of Ancient Art. By Kenan T. Erim. Photos by Jonathan Blair. NGS research grant. 766-791, *June 1972*
Ancient Aphrodisias and Its Marble Treasures. By Kenan T. Erim. Photos by Jonathan S. Blair. NGS research grant. 280-294, *Aug. 1967*
Last Moments of the Pompeians. By Amedeo Maiuri. Photos by Lee E. Battaglia. Paintings by Peter V. Bianchi. 651-669, *Nov. 1961*
Roman Life in 1,600-year-old Color Pictures. By Gino Vinicio Gentili. Photos by Duncan Edwards. 211-229, *Feb. 1957*
Ancient Rome Brought to Life. Paintings by H. M. Herget. 570-633, *Nov. 1946*

See also Animation; Architecture; *listing under* Art Galleries; Cave Art; Ceramics; Crafts; Folk Art; Glass; Metalwork; Mosaics; Painting; Pottery; Rock Art; Sculpture

ART GALLERIES. *See* Corcoran Gallery of Art; Dresden Treasures; Hermitage; Huntington; Kunsthistorisches Museum; Louvre; National Gallery of Art; National Museum of Anthropology, Mexico City; Vizcaya; *and* Vatican City

The **ART** of Photography At National Geographic. By Jane Livingston. 322-351, *Sept. 1988*

The **ART** in Farming. Photo essay by Georg Gerster. 391-399, *Sept. 1984*

ART RESTORATION:

Vatican City. By James Fallows. Photos by James L. Stanfield and Victor R. Boswell, Jr. Included: Treasures of the Vatican; Restoration of Sistine frescoes; Reconstruction of Michelangelo's "Pietà." 723-775, *Dec. 1985*
Restoration Reveals the "Last Supper." By Carlo Bertelli. Photos by Victor R. Boswell, Jr. 664-685, *Nov. 1983*
Warriors From a Watery Grave (Bronze Sculptures). By Joseph Alsop. 821-827, *June 1983*
Venice Fights for Life. By Joseph Judge. Photos by Albert Moldvay. Included: Venice's Golden Legacy. Photos by Victor R. Boswell, Jr. 591-631, *Nov. 1972*
Thera, Key to the Riddle of Minos. By Spyridon Marinatos. Photos by Otis Imboden. 702-726, *May 1972*
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ART SUPPLEMENTS. *See* Pictorial Supplements: Enlargements and Panoramas

ARTESIAN Water Predictions. 361-363, *Apr. 1910*

ARTHROPODS. *See* Crustaceans; Insects; Scorpions; Spiders

ARTHUR, CHESTER A.:

Profiles of the Presidents: III. The American Giant Comes of Age. By Frank Freidel. 660-711, *May 1965*
Inside the White House. By Lonnelle Aikman. Photos by B. Anthony Stewart and Thomas Nebbia. 3-43, *Jan. 1961*

The only statue Michelangelo signed, the "Pietà," restored after a 1972 attack, now rests behind bulletproof glass in St. Peter's Basilica, Vatican City. VICTOR R. BOSWELL, JR., NGS

ARTISANS. *See* Crafts; Folk Art

ARTIST Adventures on the Island of Bali. By Franklin Price Knott. 326-347, *Mar. 1928*

ARTISTS:

Remington, the Man and the Myth. By Louise E. Levathes. Photos by Chris Johns. 200-231, *Aug. 1988*

C. M. Russell, Cowboy Artist. By Bart McDowell. Photos by Sam Abell. 60-95, *Jan. 1986*

Restoration Reveals the "Last Supper." By Carlo Bertelli. Photos by Victor R. Boswell, Jr. 664-685, *Nov. 1983*

Toledo–El Greco's Spain Lives On. By Louise E. Levathes. Photos by James P. Blair. Included: The Genius of El Greco. Introduction by J. Carter Brown. 726-753, *June 1982*

Goal at the End of the Trail: Santa Fe. By William S. Ellis. Photos by Gordon W. Gahan and Otis Imboden. 323-345, *Mar. 1982*

Belgium: One Nation Divisible. By James Cerruti. Photos by Martin Rogers. Included: How the Flemings brought depth to painting. 314-341, *Mar. 1979*

Leonardo da Vinci: A Man for All Ages. By Kenneth MacLeish. Photos by James L. Amos. 296-329, *Sept. 1977*

Audubon "On the Wing." By David Jeffery. Photos by Bates Littlehales. 149-177, *Feb. 1977*

Venice Fights for Life. By Joseph Judge. Photos by Albert Moldvay. Included: Venice's Golden Legacy: Giovanni Bellini, Giorgione, Giuseppe Heintz, Jacopo Tintoretto, Titian, Paolo Veronese, Andrea del Verrocchio, Leonardo da Vinci. Photos by Victor R. Boswell, Jr. 591-631, *Nov. 1972*

Chelsea, London's Haven of Individualists. By James Cerruti. Photos by Adam Woolfitt. Included: Sir Jacob Epstein, Anthony Gray, Walter Greaves, Edward Halliday, Augustus John, Guy Roddon, Dante Gabriel Rossetti, John Singer Sargent, William Thomson, Joseph Mallord William Turner, James McNeill Whistler. 28-55, *Jan. 1972*

The Louvre, France's Palace of the Arts. By Hereward Lester Cooke, Jr. Included: P. Cézanne, J. Chardin, J. Clouet, H. Daumier, J. David, E. Delacroix, Jan van Eyck, C. Le Brun, É. Manet, A. Mantegna, G. Metsu, Michelangelo, F. Perrier, Rembrandt, H. Rigaud, G. Seurat, Leonardo da Vinci, J. A. Watteau, James A. McNeill Whistler. 796-831, *June 1971*

The National Gallery After a Quarter Century. By John Walker. 348-371, *Mar. 1967*

In Quest of Beauty. By Paul Mellon. Contents: Frédéric Bazille, Pierre Bonnard, Mary Cassatt, Paul Cézanne, Edgar Degas, Paul Gauguin, Vincent van Gogh, Édouard Manet, Claude Monet, Berthe Morisot, Pablo Picasso, Auguste Renoir, Henri Rousseau, Georges Seurat, Henri de Toulouse-Lautrec. 372-385, *Mar. 1967*

Under the Dome of Freedom: The United States Capitol. By Lonnelle Aikman. Photos by George F. Mobley. 4-59, *Jan. 1964*

Early America Through the Eyes of Her Native Artists. By Hereward Lester Cooke, Jr. Contents: Francis Alexander, Winthrop Chandler, James Evans, George A. Hayes, Edward Hicks, Joseph H. Hidley, H. Knight, Hyacinthe Laclotte, Linton Park, H.M.T. Powell, Charles S. Raleigh, A. Tapy, John Toole, Benjamin West, J. Wiess. 356-389, *Sept. 1962*

The Kress Collection: A Gift to the Nation. By Guy Emerson. Contents: Giovanni Bellini, Bernardo Bellotto, Abraham Van Beyeren, Paris Bordone, Canaletto (Antonio Canale), Bernardino Fungai, El Greco, Francesco Guardi, Frans Hals, Pieter de Hooch, Lorenzo Lotto, Master of the Braunschweig Diptych, The Montaione Master, Neroccio de' Landi, Piero di Cosimo, Rembrandt Van Rijn, Jusepe de Ribera, Cosimo Rosselli, Peter Paul Rubens, Jan Steen, Bernardo Strozzi, Giovanni Battista Tiepolo, Jacopo Tintoretto, Titian, Sir Anthony Van Dyck, Domenico Veneziano, Paolo Veronese, Elisabeth Vigée-Lebrun, Simon Vouet. 823-865, *Dec. 1961*

Great Masters of a Brave Era in Art (Impressionist). By Hereward Lester Cooke, Jr. Contents: Eugene Boudin, Mary Cassatt, Paul Cézanne, Jean-Baptiste-Camille Corot, Honoré Daumier, Edgar Degas, Eugène Delacroix, Henri Fantin-Latour, Paul Gauguin, Vincent van Gogh, Édouard Manet, Claude Monet, Berthe Morisot, Camille Pissarro, Auguste Renoir, Henri Rousseau, Henri de Toulouse-Lautrec. 661-697, *May 1961*

The Nation's Newest Old Masters (National Gallery of Art). By John Walker. Paintings from Kress Collection. Contents: Nicolò dell' Abate and Denys Calvaert, Albrecht Altdorfer, Sandro Botticelli, Cima da Conegliano, François Clouet, Jacques-Louis David, Juan de Flandes, Jean-Honoré Fragonard, Orazio Gentileschi, El Greco, Lucas Van-Leyden, Hans Memling, Pieter Jansz. Saenredam, St. Bartholomew Master, Jacopo Tintoretto, Titian, Juan van der Hamen y Leon, Sir Anthony Van Dyck, Paolo Veronese, Leonardo da Vinci. 619-657, *Nov. 1956*

America's First Painters: Indians. By Dorothy Dunn. 349-377, *Mar. 1955*

U. S. Capitol, Citadel of Democracy. By Lonnelle Aikman. 143-192, *Aug. 1952*

Your National Gallery of Art After 10 Years. By John Walker. Paintings from Kress Collection. Contents: Pieter Bruegel the Elder, Canaletto, Philippe de Champagne, Jean Baptiste Siméon Chardin, Albrecht Dürer, Benozzo Gozzoli, Jean Auguste Dominique Ingres, Giovanni Battista Piazzetta, Hubert Robert, Girolamo Romanino, Master of St. Gilles, Sebastiano del Piombo, Luca Signorelli, Sodoma, Bernardo Strozzi, Titian, Sir Anthony Van Dyck. 73-103, *Jan. 1952*

American Processional: History on Canvas. By John and Blanche Leeper. Contents: John and Victor Audubon, George Caleb Bingham, David G. Blythe, James E. Butterworth, James H. Cafferty, Conrad Wise Chapman, John Singleton Copley, Robert Dudley, Thomas Eakins, J. G. Evans, Ambroise Louis Garneray, Henry Gilder, William Hahn, George Peter Alexander Healy, Winslow Homer, Thomas Hovenden, Frederick Kemmelmeyer, Edward Moran, Linton Park, Charles Willson Peale, Adrian Persac, Frederick Remington, C. Riess, Charles G. Rosenberg, John Searle, Dominique Serres, John Stevens, Louis Comfort Tiffany, John Trumbull, Charles F. Ulrich, Benjamin West. 173-212, *Feb. 1951*

The Vienna Treasures and Their Collectors. By John Walker. Contents: Michelangelo Merisi da Caravaggio, Domenico Feti, Albrecht Dürer, Francesco Guardi, Jacob Jordaens, Lorenzo Lotto, Jusepe de Ribera, Peter Paul Rubens, Jan Steen, Tintoretto, Titian, Sir Anthony Van Dyck, Diego Rodriguez de Silva y Velázquez, Jan Vermeer, Paolo Veronese. 737-776, *June 1950*

The British Way. By Sir Evelyn Wrench. Included: William Hogarth, Hans Holbein, Sir Edwin Landseer, Sir Joshua Reynolds, Benjamin West. 421-541, *Apr. 1949*

Our Search for British Paintings. By Franklin L. Fisher. 543-550, *Apr. 1949*

Masterpieces on Tour. By Harry A. McBride. Contents: Hans Baldung, Alessandro Botticelli, Pieter Bruegel the Elder, Andrea del Castagno, Jean Baptiste Siméon Chardin, Albrecht Dürer, Jan Van Eyck, Frans Hals, Meindert Hobbema, Hans Holbein the Younger, Georges de La Tour, Lucas Van Leyden, Édouard Manet, Raphael, Rembrandt, Peter Paul Rubens, Jan Steen, Bernardo Strozzi, Gerard Ter Borch, Titian, Jan Vermeer, Antoine Watteau, Rogier Van der Weyden. 717-750, *Dec. 1948*

American Masters in the National Gallery. By John Walker. Contents: George Bellows, Mary Cassatt, William Merritt Chase, John Singleton Copley, Thomas Eakins, Chester Harding, Childe Hassam, Winslow Homer, George Inness, Rembrandt Peale, John Quidor, Edward Savage, Christian Schussele, Gilbert Stuart, Thomas Sully, James Abbott McNeill Whistler. 295-324, *Sept. 1948*

Artists Look at Pennsylvania. By John Oliver La Gorce. Contents: Aaron Bohrod, Adolf Dehn, Ernest Fiene,

Armed with pastel crayons, Alexandre Iacovleff captures the intensity of nomadic horsemen wearing shakos of dyed sheepskin in Herat, Afghanistan. MAYNARD OWEN WILLIAMS, NGS

William Gropper, Fletcher Martin, Hobson Pittman, Paul Sample. 37-56, *July 1948*

Old Masters in a New National Gallery. By Ruth Q. McBride. Paintings from the Kress and Mellon Collections. Contents: Giovanni Bellini; Jean-Baptiste Chardin; Petrus Christus; John Singleton Copley; Carlo Crivelli; El Greco; Thomas Gainsborough; Giorgione; Giotto; Goya; Frans Hals; Holbein the Younger; Pieter de Hooch; Filippo Lippi; Lorenzo Lotto; Perugino; Pinturicchio; Sir Henry Raeburn; Raphael; Rembrandt; Sir Joshua Reynolds; Peter Paul Rubens; Sassetta; Gilbert Stuart; Titian; Sir Anthony Van Dyck; Velazquez; Jan Vermeer; Paolo Veronese; Benjamin West. 1-50, *July 1940*

ARTS AND CRAFTS. *See* Crafts; Folk Art

ARTVIN, Turkey:

On the Turks' Russian Frontier: Everyday Life in the Fastnesses between the Black Sea and Ararat, Borderland of Oil and Minerals that Hitler Covets. By Edward Stevenson Murray. 367-392, *Sept. 1941*

ARUBA (Island), Netherlands Antilles:

The Netherlands Antilles: Holland in the Caribbean. By James Cerruti. Photos by Emory Kristof. 115-146, *Jan. 1970*

Curaçao and Aruba on Guard. By W. Robert Moore. 169-192, *Feb. 1943*

ARUNACHAL PRADESH (State), India:

Long Journey of the Brahmaputra. By Jere Van Dyk. Photos by Raghubir Singh and Galen Rowell. Included: A Rare Visit to a World Unto Itself. By Raghubir Singh. 672-711, *Nov. 1988*

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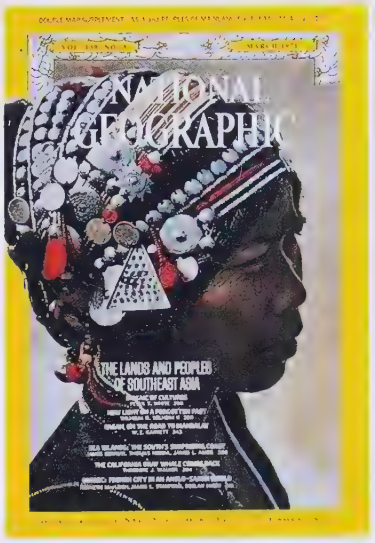

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Feeling right at home, the nine members of Skylab's three crews gather in a training simulator of America's first space station, launched in 1973. From left, they are Capt. Alan L. Bean, USN; Maj. Jack R. Lousma, USMC; Capt. Charles Conrad, Jr., USN; Comdr. Paul J. Weitz, USN; Comdr. Joseph P. Kerwin, M.D., USN; Lt. Col. Gerald P. Carr, USMC; Edward G. Gibson, Ph.D.; Col. William R. Pogue, USAF; and Owen K. Garriott, Ph.D. MICHAEL LAWTON

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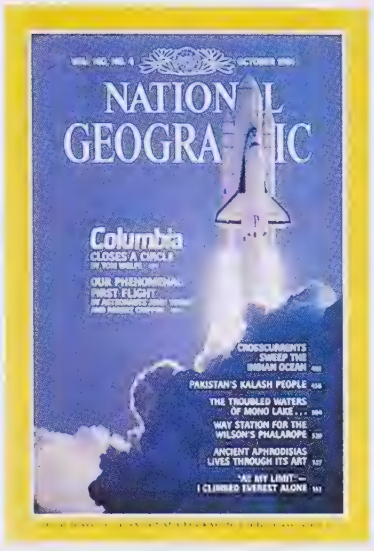
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Columbia
CLOSES A CIRCLE
OUR PHENOMENAL FIRST FLIGHT
CROSSCURRENTS SWEEP THE INDIAN OCEAN
PAKISTAN'S KALASH PEOPLE
THE TROUBLED WATERS OF MONO LAKE
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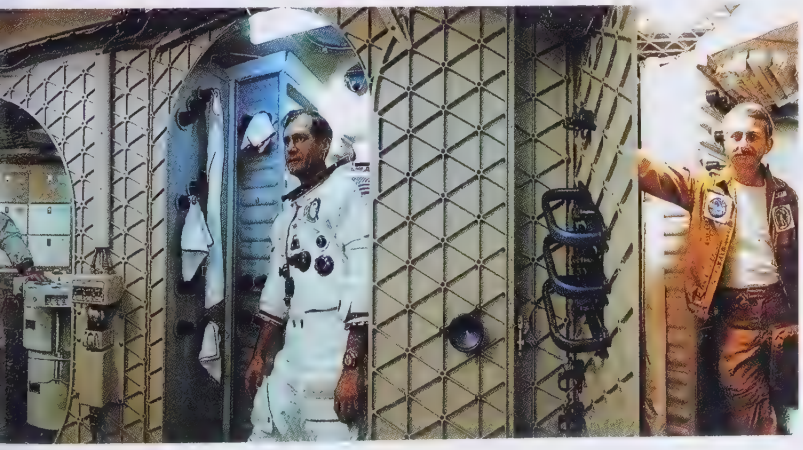

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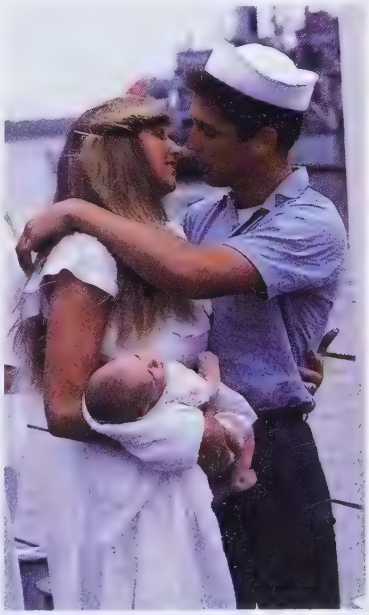

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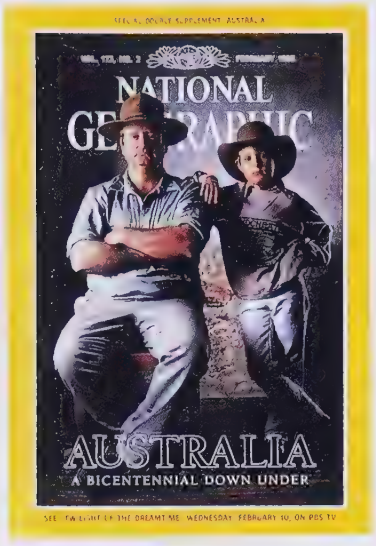

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An* Australopithecus africanus *female, who lived perhaps 2.5 to 3 million years ago, digs tubers for a meal; a male pulls edible ant galls from a thorn. PAINTING BY © JAY H. MATTERNES

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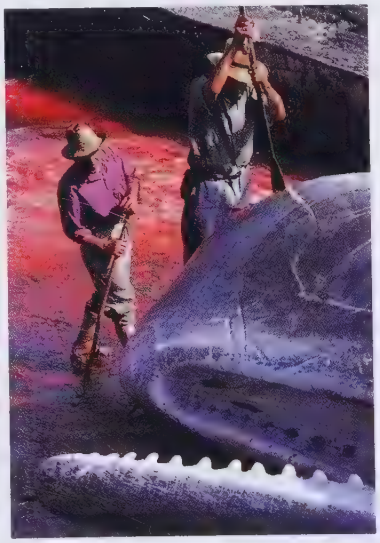

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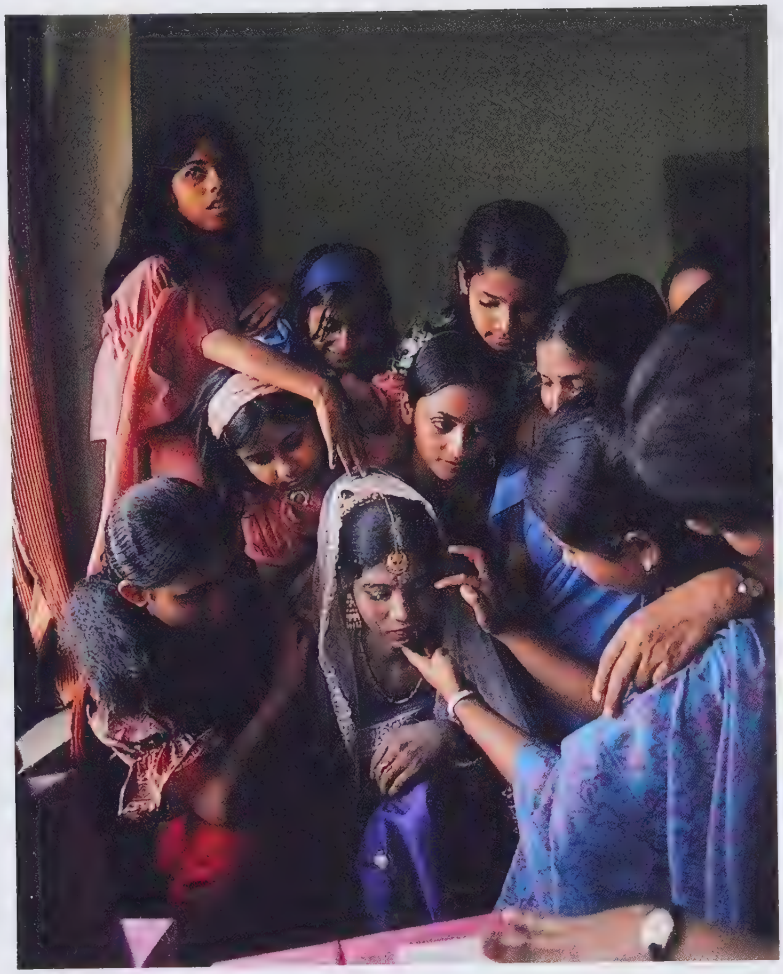

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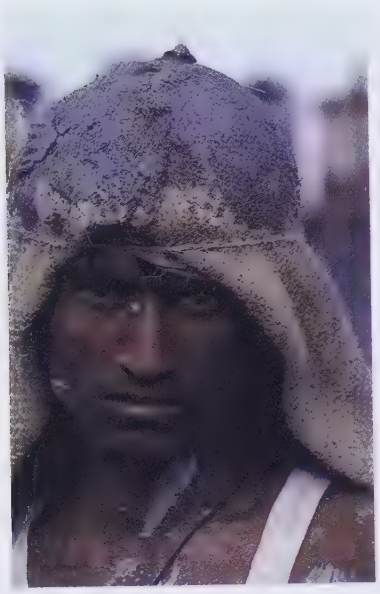

Jute sack caps one of 15,000 Bangladeshis who dammed the Feni River in 1985 to control floods. PABLO BARTHOLOMEW, GAMMA-LIAISON

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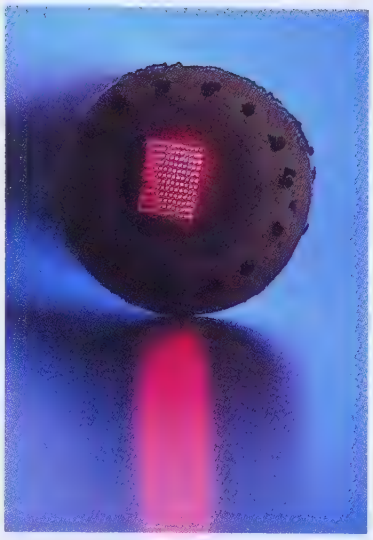

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Hiram Bingham paddles across Peru's Apurímac River in 1912, a year after his finds at the Inca ruins of Machu Picchu. PAUL BESTOR

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A migratory bird overflies the stylized sources of its mysterious homing prowess—from star patterns to magnetic fields. PAINTING BY BARRON STOREY

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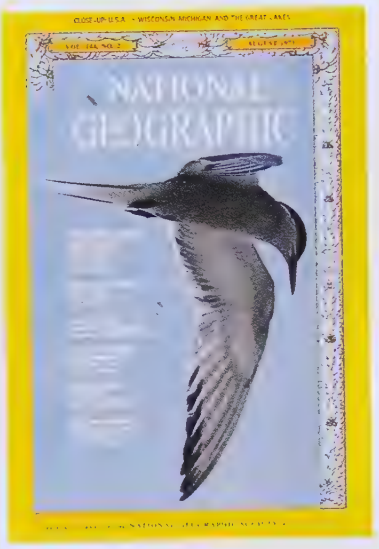

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High Country of Colorado. By Alfred M. Bailey. Photos by author, Robert J. Niedrach, and F. G. Brandenburg. Contents: Bluebirds, Flickers, Golden Eagles, Goshawks, Hawks, Hummingbirds, Juncos, Owls, Pine Grosbeaks, Ptarmigans, Robins, Sage Grouse, Sap-suckers, Sparrows, Vireos, Warblers, Woodpeckers. 43-72, *July 1946*

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Dressed in courting plumage, a common egret eyes nesting grounds on the Vingtune Islands of Texas. FREDERICK KENT TRUSLOW

Rose-breasted Grosbeak, Rough-winged Swallow, Sharp-tailed Grouse, Wilson's Phalarope, Woodcock, Yellowthroat. 721-744, *June 1945*

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What the Fighting Yanks See. By Wanda Burnett. Included: Birds of Paradise, Cassowaries, Frogmouths, Grebes, Hornbills, Laughing Jack, Laughing Jackass, Lories, Love Terns, Parakeets, Parrots, Pink Cockatoos, White Cockatoos. 451-476, *Oct. 1944*

Touring for Birds with Microphone and Color Cameras. By Arthur A. Allen.

Note: Birds of Arizona, Texas, and California; and a discussion of the "Life Zone Theory" which treats of the distribution of bird fauna in relation to temperature. Contents: Burrowing Owl, California Blue Grosbeak, California Clapper Rail, California Woodpecker, Clark's Nutcracker, Coppery-tailed Trogon, Eastern Brown Pelican, Eastern Song Sparrow, Florida Ground Dove, Gambel's Quail, Hoyt's Horned Lark, Mourning Dove, Nighthawk, Purple Gallinule, Red-eyed Towhee, Reddish Egret, Sandhill Crane, Saw-whet Owl, Scissor-tailed Flycatcher, Sennett's Oriole, Snow Bunting, Snowy Egret, Western Gull, Western Horned Owl, Yellow Warbler. 689-712, *June 1944*

Birds on the Home Front. By Arthur A. Allen. Contents: Canada Geese, Catbirds, Chickadees, Chuck-will's-widow, Cowbirds, Flickers, Flycatchers, Gallinules, Grebes, Grouse, Hummingbirds, Meadowlarks, Orioles, Owls, Peregrines, Plovers, Ptarmigans, Puffins, Rails, Redstarts, Shrikes, Skimmers, Swallows, Vireos, Warblers, Waxwings. 32-56, *July 1943*

Ambassadors of Good Will: Annual Messengers from Our Neighbor Republics to the South Bring Cheer and Add Interest to the Out-of-Doors. By Arthur A. Allen. Contents: Belted Kingfisher, Bobolink, Cardinal, Prothonotary Warbler, Red-eyed Vireo, Red-headed Woodpecker, Redwing,

With talons poised in silent flight, a five-week-old long-eared owlet swoops through the night toward its prey. ART WOLFE

Tree Swallow, Wood Thrush, Yellow-billed Cuckoo, Yellow-breasted Chat. 786-796, *June 1942*

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Birds of the High Seas: Albatrosses and Petrels; Gannets, Man-o'-war-birds, and Tropic-birds. By Robert Cushman Murphy. Paintings by Allan Brooks. 226-251, *Aug. 1938*

We Live Alone, and Like It–On an Island (Skokholm). By R. M. Lockley. Included: Auks, Cormorants, Gannets, Gulls, Petrels, Puffins, Shearwaters. 252-278, *Aug. 1938*

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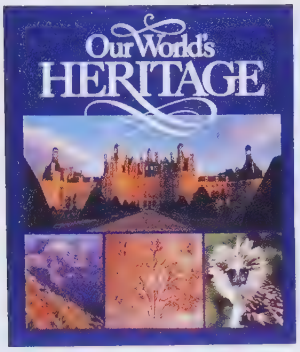

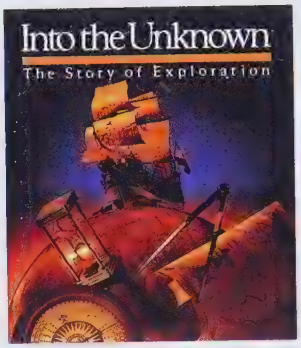

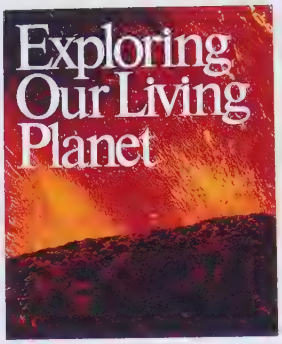

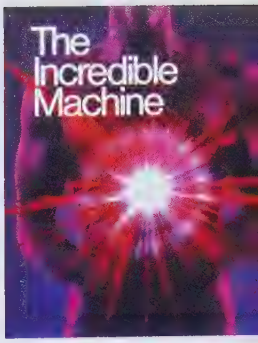

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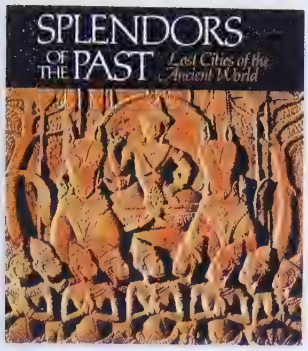

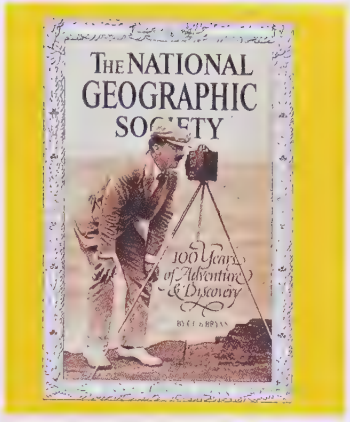

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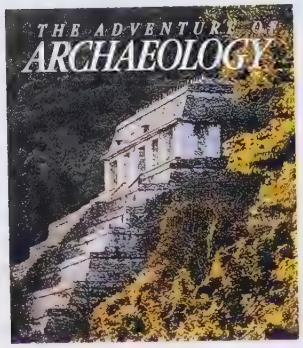

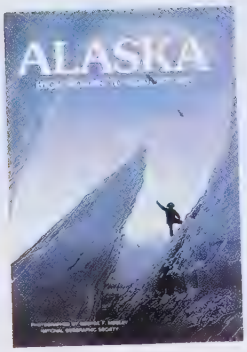

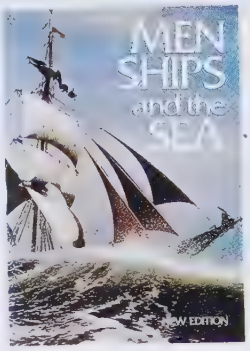

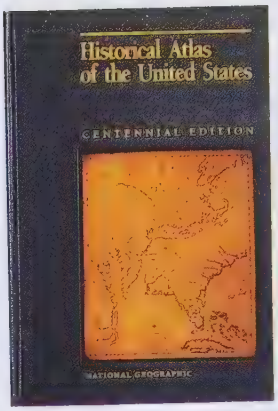

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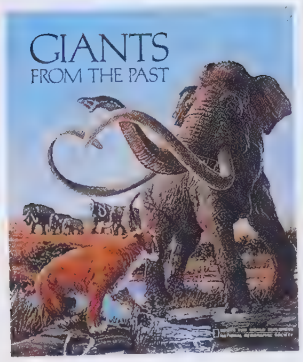
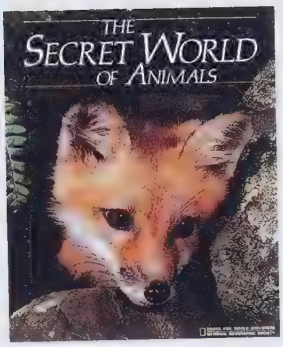
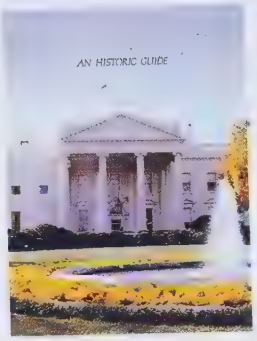
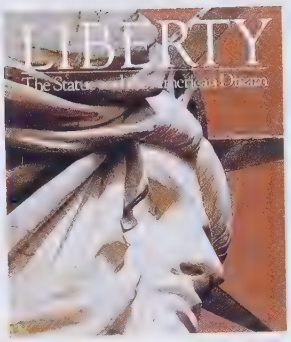
A polar bear makes a meal of a ribbon seal, an uncommon species with a range that includes the Alaska coast south of the Yukon Delta. PAINTING BY LOUIS AGASSIZ FUERTES









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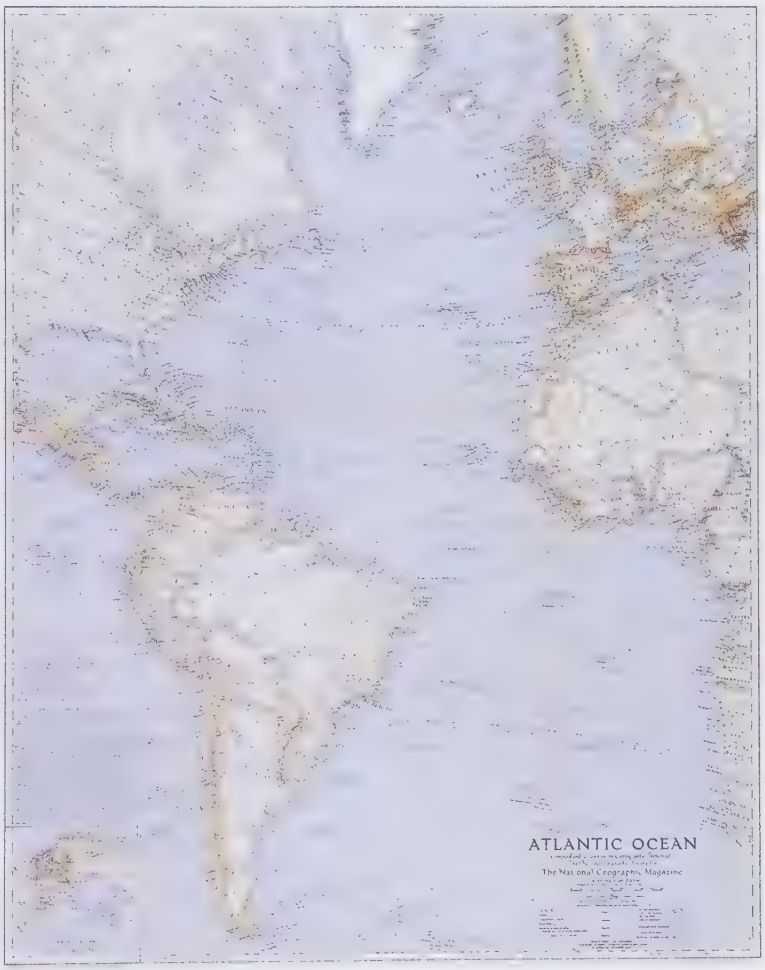

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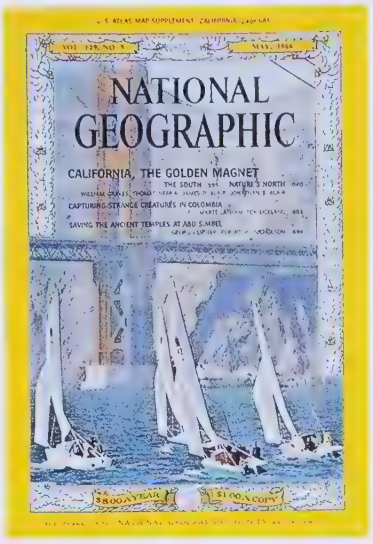

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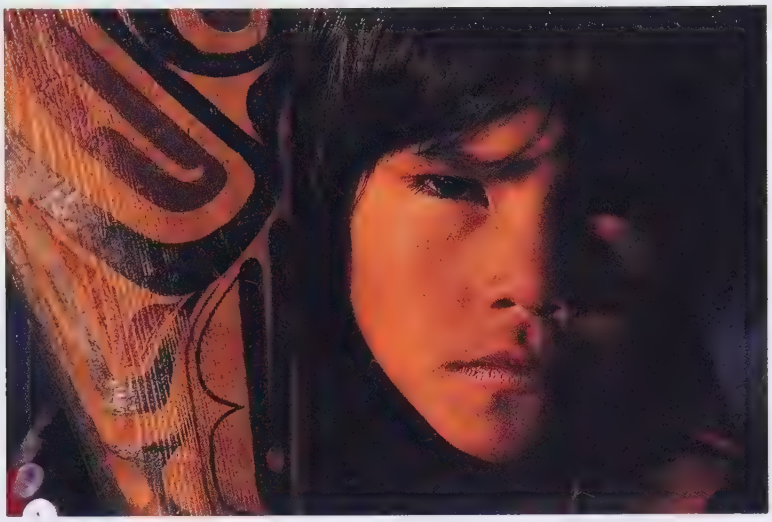

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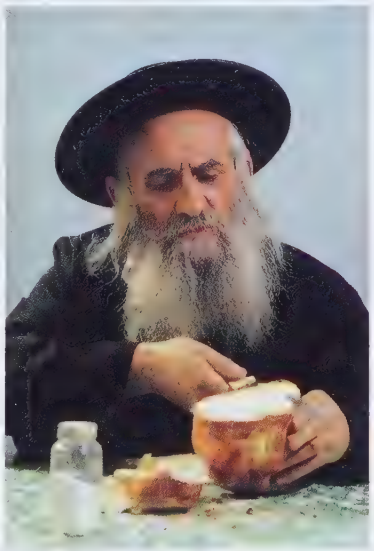

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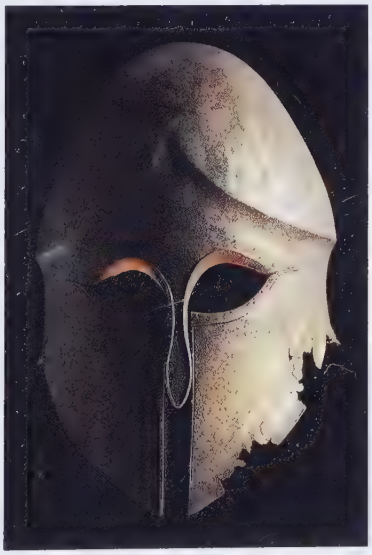

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JAMES L. STANFIELD, NGS

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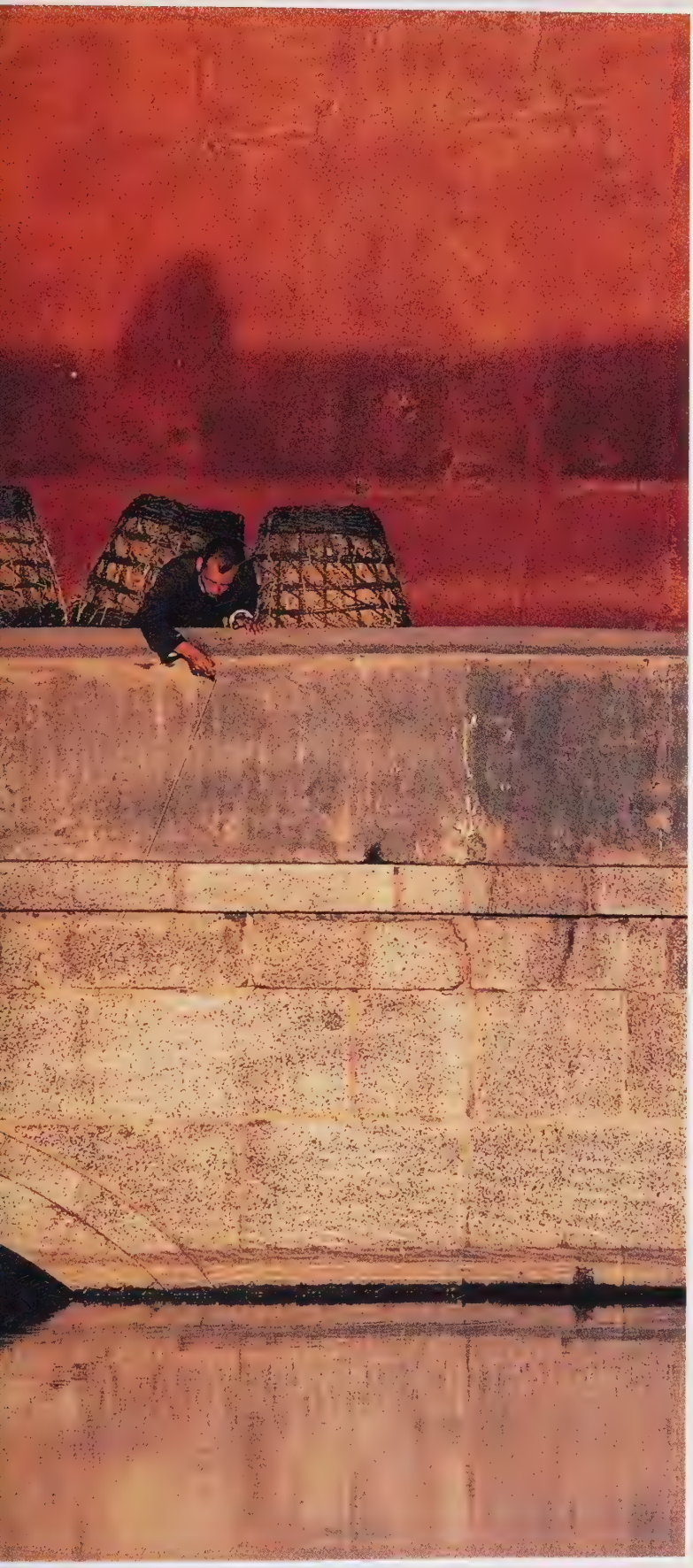

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An angler tests his line as he fishes the 57-yard-wide moat in China's Forbidden City.

JIM BRANDENBURG

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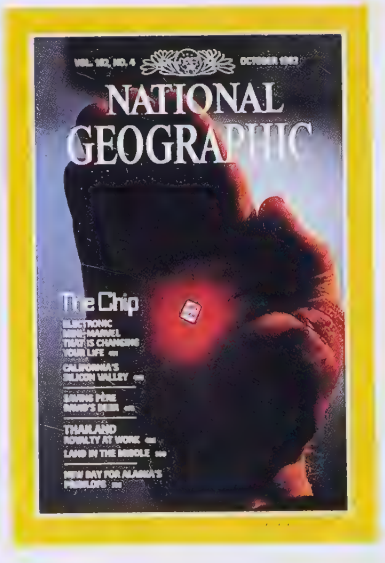

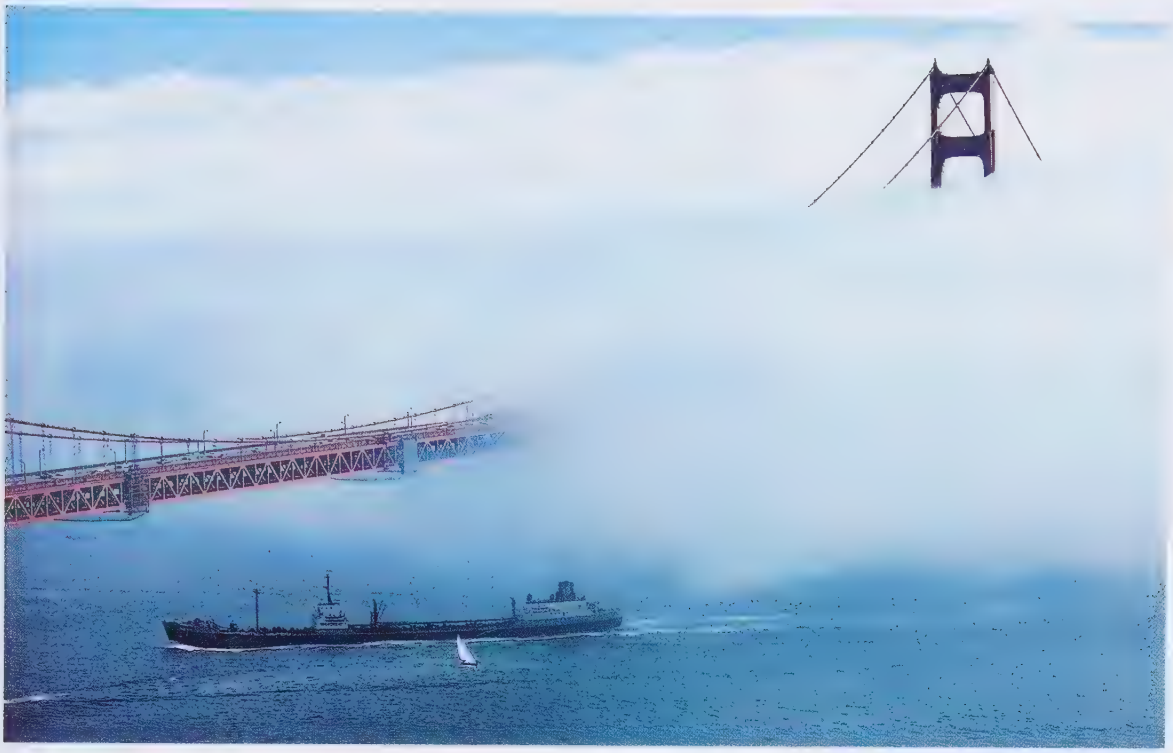

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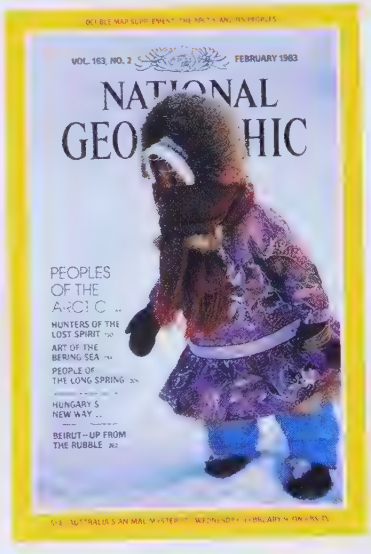

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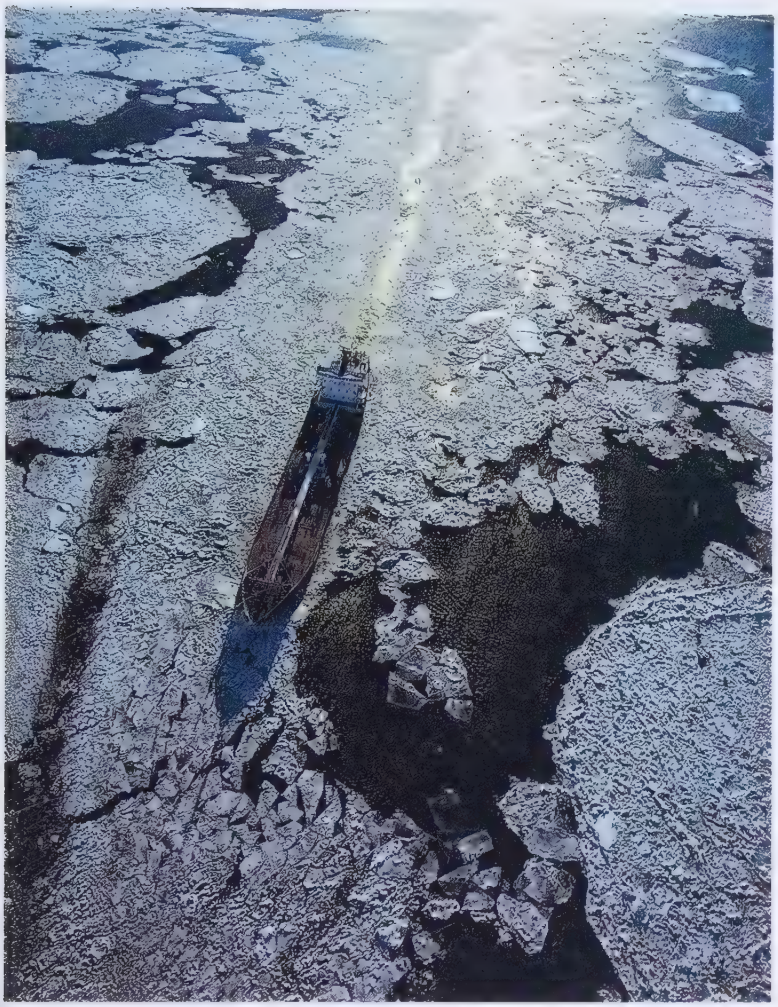

A freighter cuts through loose ice on the St. Lawrence River, Canada's commercial highway from the Great Lakes to the Atlantic. BRUCE DALE, NGS

Columbia; Canadian Rocky Mountains; Churchill; Gaspé Peninsula; Klondike District; Labrador; Manitoba; New Brunswick; Newfoundland; Northwest Territories; Nova Scotia; Ontario (Province); Passamaquoddy Bay; Quebec (Province); Saskatchewan; Toronto; Yukon Territory; *and* Ellesmere Island; Kennedy, Mount; Resolute Bay; St. Elias, Mount; Waterton-Glacier International Peace Park

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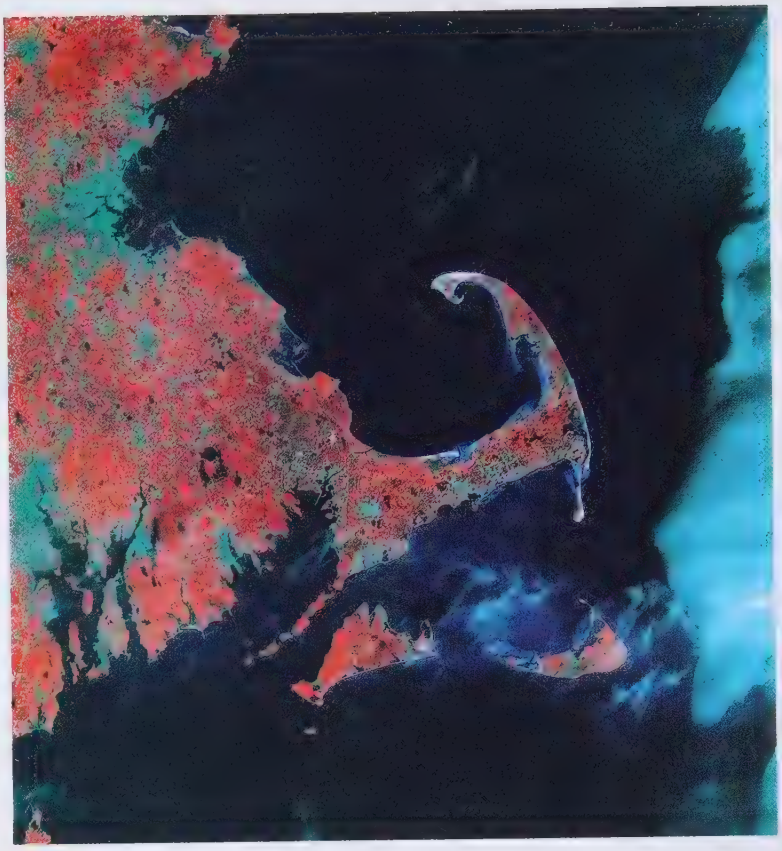

This Landsat view published in the* Atlas of North America *shows Cape Cod, Massachusetts, a fishhook of woodland, bog, and beach. EARTH SATELLITE CORPORATION

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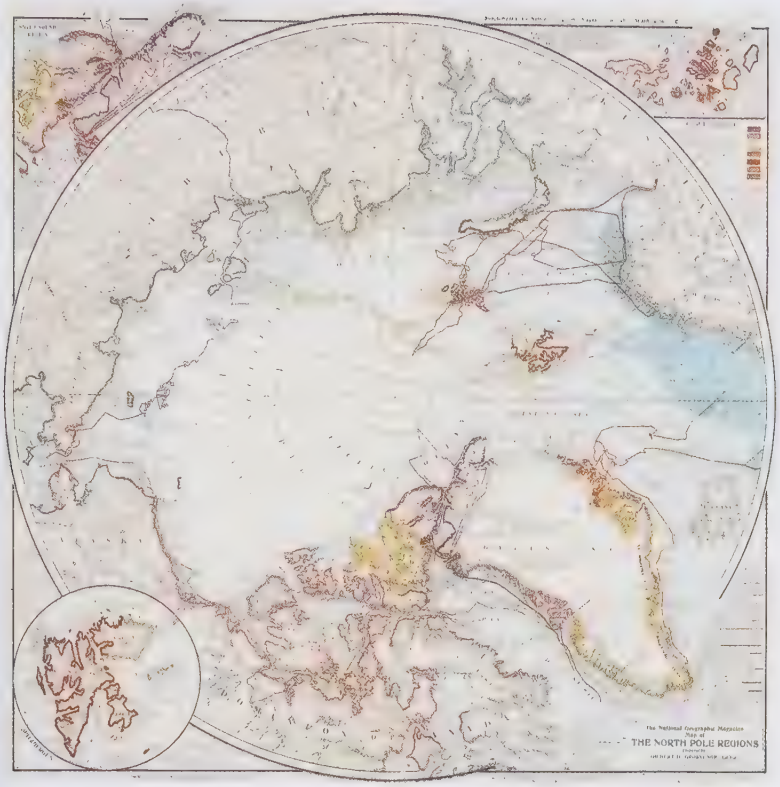

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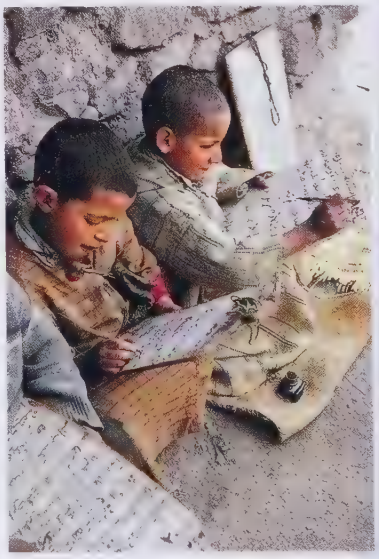

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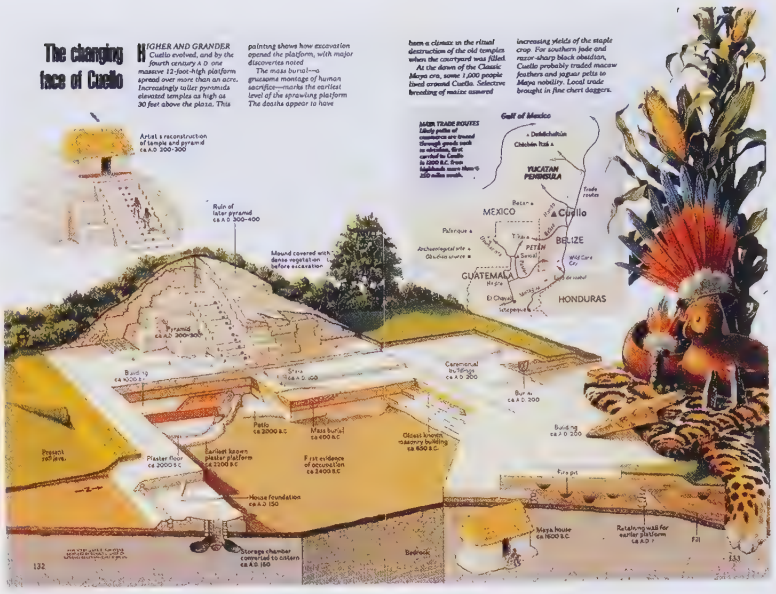

Four seasons of excavation unearthed Cuello, a Maya ceremonial center in Belize that spanned some 26 centuries of Mesoamerican prehistory. PAINTING BY LLOYD K. TOWNSEND

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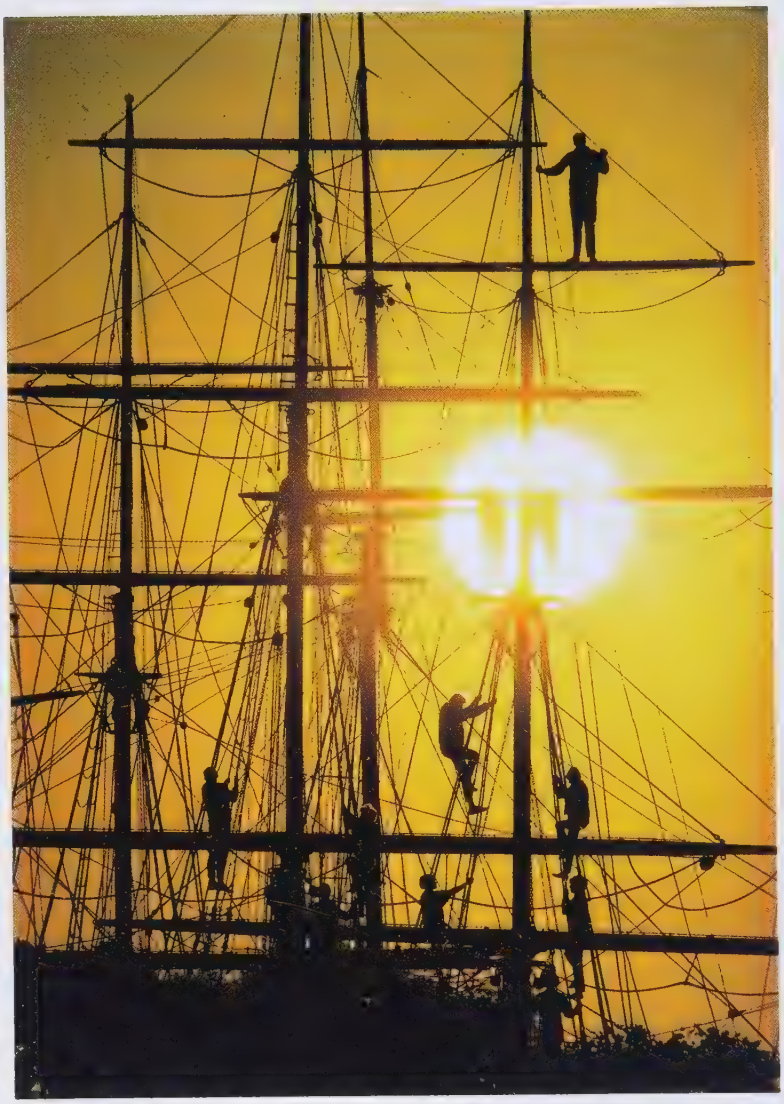

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After centuries of outside influence families in the Mexican highlands have abandoned ancient Maya ways and adopted European clothing, religion, and language. DAVID BRILL

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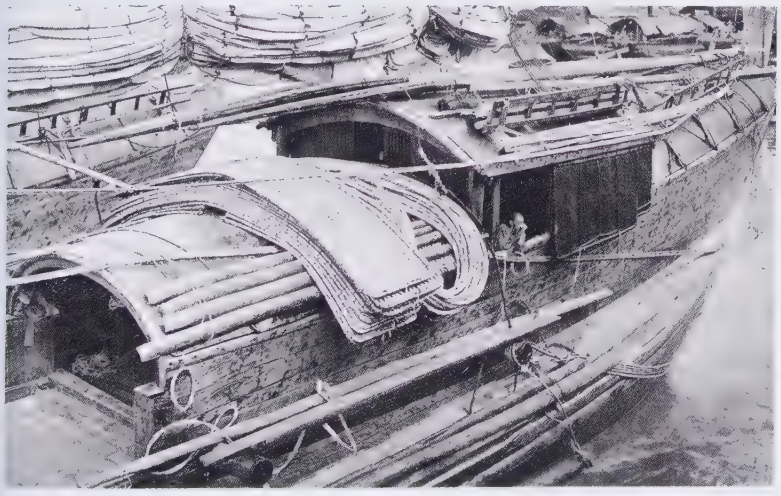
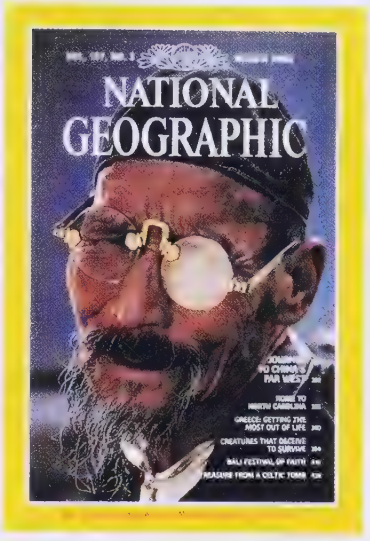


A 1920 river boat at Ichang, China, carries cable to tow the craft through rapids in the Yangtze gorges. ROBERT F. FITCH



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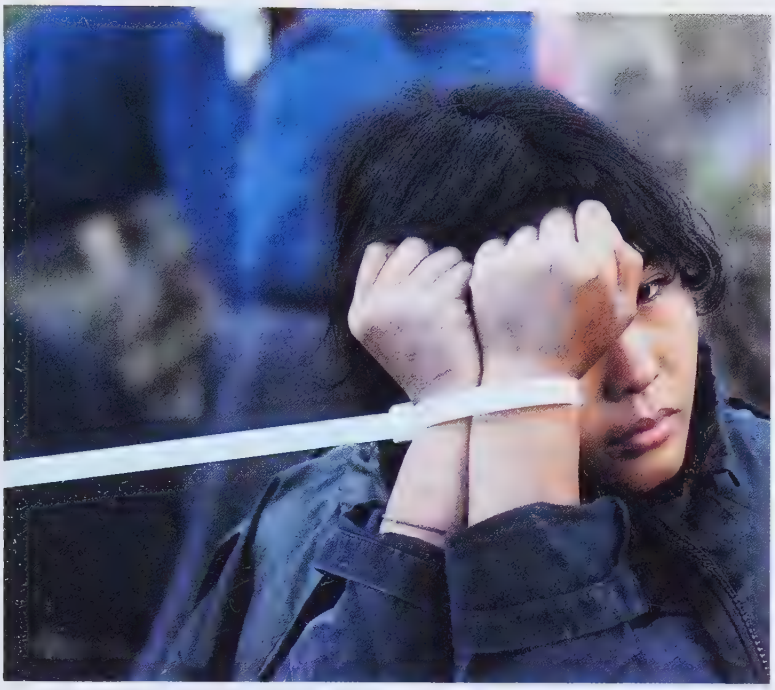

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Faces and places of the Northeast come alive in this "Close-up: U.S.A." supplement to the January 1978 GEOGRAPHIC. The reverse shows one in a series of U.S. regional maps.

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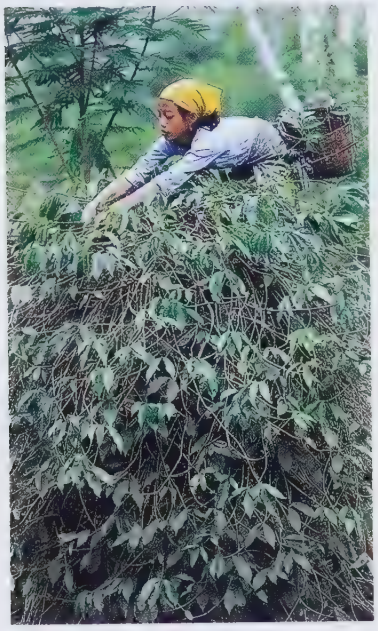

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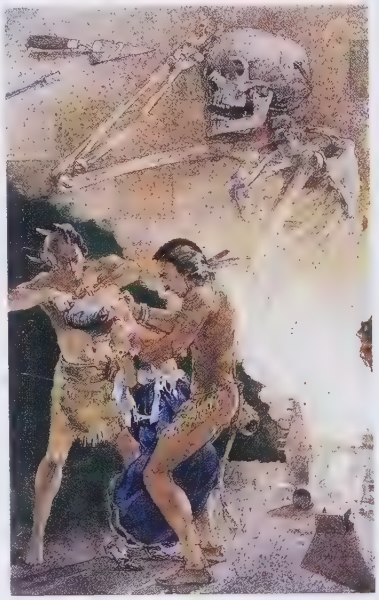

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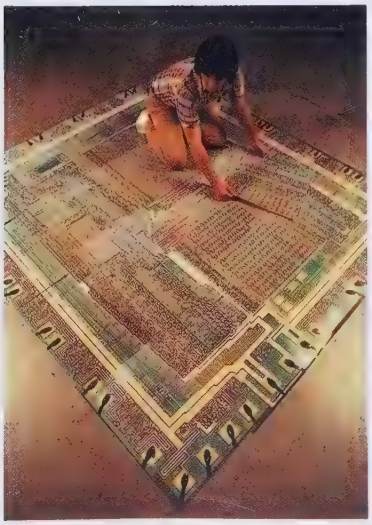

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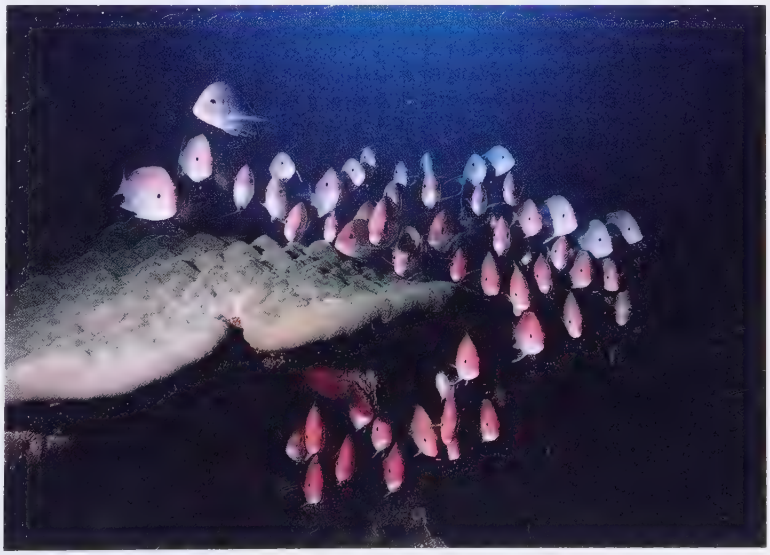

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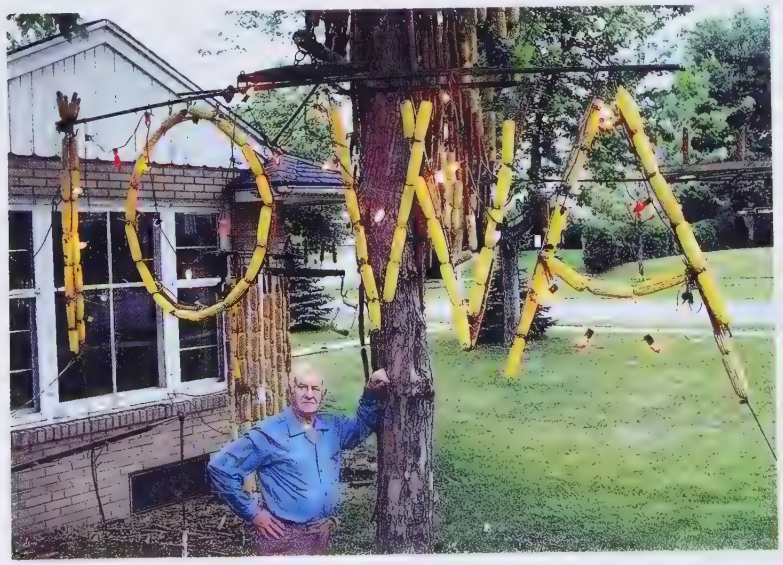

Corn-ear feeder, spelling out the state's name, draws pigeons—and neighbors' consternation—to Vernon Schall's yard in Des Moines, Iowa. DANA DOWNIE

Queen Elizabeth II's June 1953 coronation parade passes London's Trafalgar Square on its way to Buckingham Palace. © UNITED PRESS

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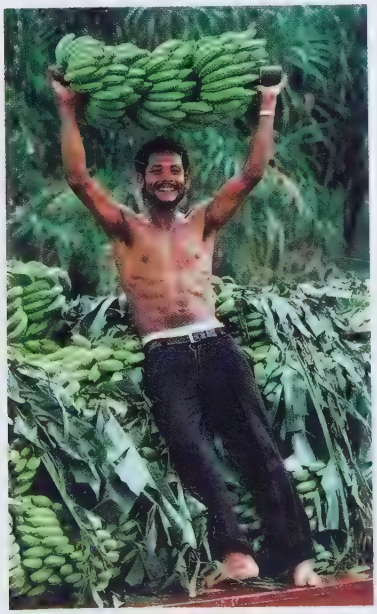

A leading Costa Rican export, bananas make this coastal plantation worker smile.
JOHN MASON, COMM PHOTO INTERNATIONAL

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Cotton: Foremost Fiber of the World. By J. R. Hildebrand. 137-192, *Feb. 1941*

COTTRELL, ERNEST J.: *Photographer*
Skyway Below the Clouds. By Carl R. Markwith. 85-108, *July 1949*

COUGARS. *See* Mountain Lions

COULSON, COTTON: *Photographer*
Switzerland: The Clockwork Country. By John J. Putman. 96-127, *Jan. 1986*
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COUNTER, S. ALLEN: *Author*
Descendants of the Expeditions. Photos by Bob Sacha. 414-429. II. The Henson Family. 422-429, *Sept. 1988*

The **COUNTRIES** of the Caribbean. By William Joseph Showalter. 227-250, *Feb. 1913*

COUNTRY-HOUSE Life in Sweden: In Castle and Cottage the Landed Gentry Gallantly Keep the Old Traditions. By Amelie Posse-Brázdová. 1-64, *July 1934*

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The **COUNTRY** of the Ant Men (Sahara). By Thomas H. Kearney. 367-382, *Apr. 1911*

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The **COURSE** of the Retail Coal Trade. By David T. Day. 394-398, *Nov. 1902*

COURTELLEMONT, GERVAIS: *Photographer*
15th-Century Vignettes of Compiègne. 609-616, *Nov. 1932*
In the Land of Cruel Desert and Majestic Mountain (Morocco). 307-314, *Mar. 1932*
Charm and Color Distinguish Norman Byways (France). 91-98, *Jan. 1932*
Color Contrasts in Northern Spain. 113-120, *Jan. 1931*
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The Battle Fields of France Eleven Years After. 523-538, *Nov. 1929*
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In her multihued sari, an Indian girl became a compelling subject for an Autochrome portrait. GERVAIS COURTELLEMONT

The Color Camera Records Scenes in Eastern Spain. 365-372, *Mar. 1929*
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Author
The Ocean. 780-791, *Dec. 1981*
Working for Weeks on the Sea Floor. Photos by Philippe Cousteau and Bates Littlehales. 498-537, *Apr. 1966*
At Home in the Sea. 465-507, *Apr. 1964*
Inflatable Ship (*Amphitrite*) Opens Era of Air-borne Undersea Expeditions. 142-148, *July 1961*
Diving Saucer (*Denise*) Takes to the Deep. 571-586, *Apr. 1960*
Calypso Explores an Undersea Canyon (Romanche Trench). Photos by Bates Littlehales. 373-396, *Mar. 1958*
Exploring Davy Jones's Locker with *Calypso*. Photos by Luis Marden. 149-161, *Feb. 1956*
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To the Depths of the Sea by Bathyscaphe. 67-79, *July 1954*
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COVERS, NGM:
Within the Yellow Border. Editorial by Wilbur E. Garrett. Included: Foldout showing early covers and all cover illustrations from the first in July, 1942, through September, 1988. 270-286, *Sept. 1988*

Cover Illustrations
Hologram of shattering crystal globe. Geographica. *Dec. 1988*
Honeycomb in Nepal. *Nov. 1988*
Ice Age ivory sculpture. *Oct. 1988*
Centennial. *Sept. 1988*
Lemurs in Madagascar. *Aug. 1988*
Handprints on Moroccan wall. *July 1988*
Good Friday procession in Antigua, Guatemala. *June 1988*
Hungarian shepherd in wool coat. *May 1988*
Diver exploring biplane wreckage off New Guinea. *Apr. 1988*
Windsurfers among icebergs on Portage Lake, Alaska. *Mar. 1988*
Australian rancher and son. *Feb. 1988*
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Diver lifting Bronze Age copper ingot at Ulu Burun, Turkey. *Dec. 1987*
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Saudi Arabian girl on swing. *Oct. 1987*
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Refugee boy in drought-stricken Sahel region, Africa. *Aug. 1987*
Geisha eating tofu. *July 1987*
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Computer image of tumor. *Jan. 1987*
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Cosmonaut outside Salyut 7 station. *Oct. 1986*
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Snow leopard. *June 1986*
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Steam locomotive passing the Taj Mahal, India. *June 1984*
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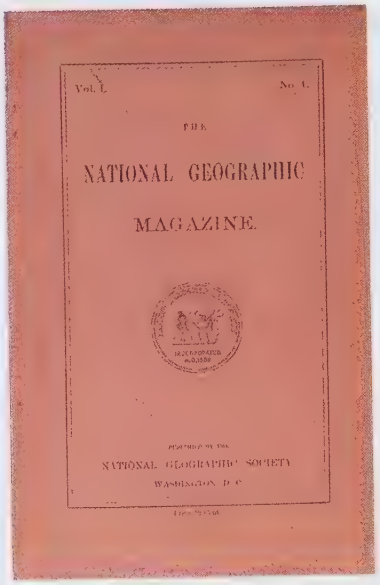

To celebrate its first century, which began in October 1888, NATIONAL GEOGRAPHIC reprinted its illustrated covers in September 1988 (below).

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Elephants at dry waterhole, Botswana. *Feb. 1984*
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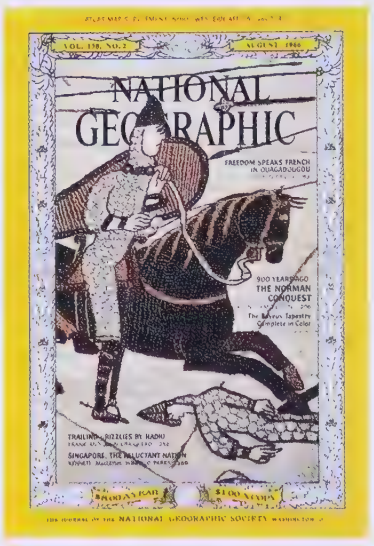

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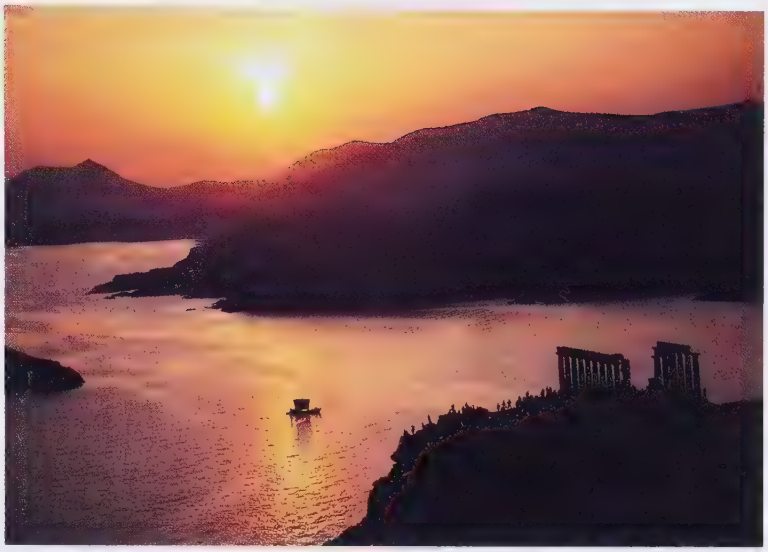

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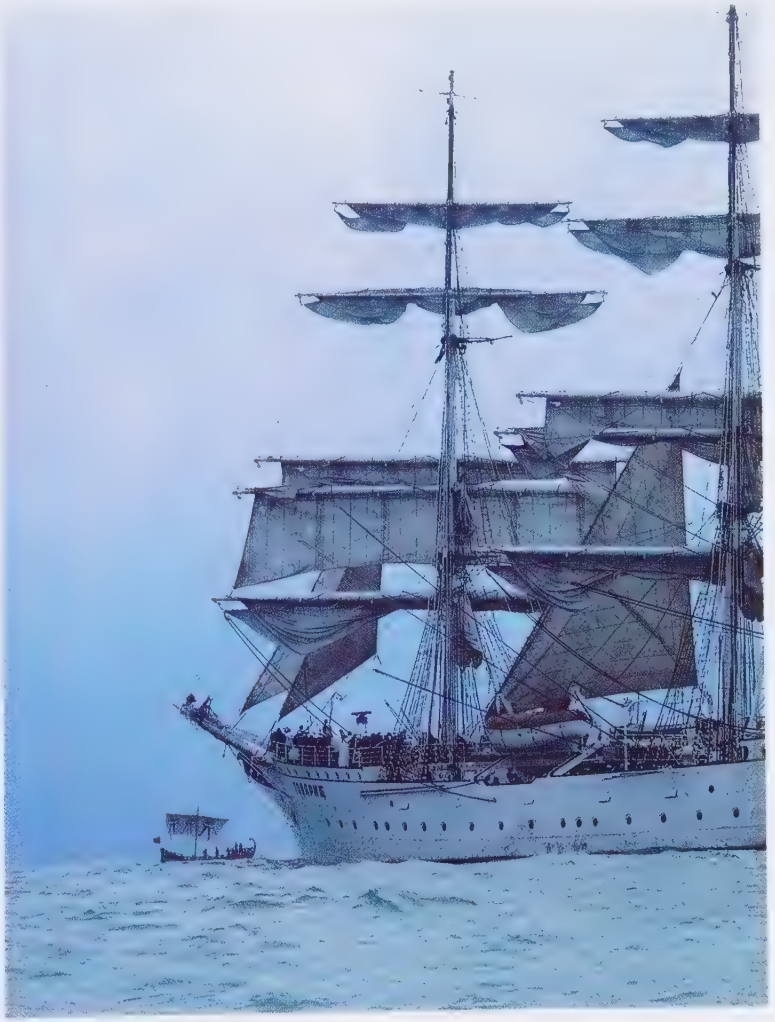

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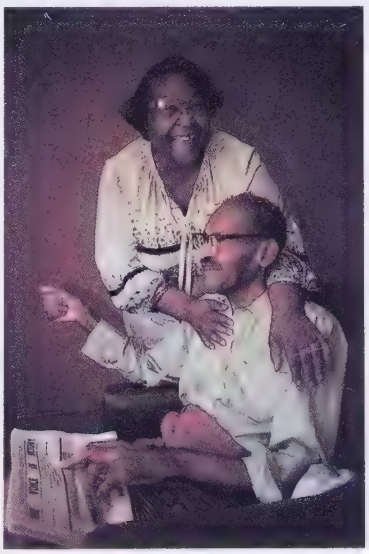

Ambassador of fellowship, Pauline Garey cheers a housebound neighbor in a west Dallas housing project. DAVID ALAN HARVEY

To generate power and irrigate Arizona farmland, the Mormon Flat Dam created Canyon Lake—and a lovely vista—in 1925. GILBERT H. GROSVENOR, NGS

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DO Volcanic Explosions Affect Our Climate? By C. G. Abbot. 181-198, *Feb. 1913*

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DO Your Bit for America: A Proclamation by President Wilson to the American People. 287-293, *Apr. 1917*

DOBIE, J. FRANK: *Author*
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DODD, ISABEL F.: *Author*
An Ancient Capital: Boghaz Keoy, Turkey. 111-124, *Feb. 1910*

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The Isles of Greece: Aegean Birthplace of Western Culture. By Melville Bell Grosvenor. Photos by Edwin Stuart Grosvenor and Winfield Parks. 147-193, *Aug. 1972*
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DODGE, RICHARD E.: *Author*
The Teaching of Physical Geography in Elementary Schools. 470-475, *Dec. 1900*

Borzois, once bred as wolfhounds by crossing an Arabian greyhound with a type of Russian collie, are a handful at a British kennel in the 1930s. © FOX PHOTOS

DODGE SATELLITE:

Historic Color Portrait of Earth From Space. By Kenneth F. Weaver. Photos by DODGE Satellite. 726-731, *Nov. 1967*

DODO (Bird):

Mauritius, Island of the Dodo. By Quentin Keynes. 77-104, *Jan. 1956*

DOE and Twin Fawns. Photo by George Shiras, 3d. Supplement, *July 1913*

DOG SHOWS:

Westminster, World Series of Dogdom. By John W. Cross, Jr. 91-116, *Jan. 1954*

Dog Mart Day in Fredericksburg. By Frederick G. Vosburgh. 817-832, *June 1951*

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Non-sporting Dogs. By Freeman Lloyd. Paintings by Walter A. Weber. Contents: Boston Terrier, Chow, Dalmatian, English Bulldog, French Bulldog, Keeshond, Poodle, Schipperke. 569-588, *Nov. 1943*

Your Dog Joins Up. By Frederick Simpich. 93-113, *Jan. 1943*

Dogs of Duty and Devotion. By Frederick G. Vosburgh. 769-774, *Dec. 1941*

Working Dogs of the World. By Freeman Lloyd. Paintings by Edward Herbert Miner. Contents: Alaskan Malemute, Australian Kelpie, Belgian Sheep Dog, Bouvier de Flandres, Boxer, Briard, Bull Mastiff, Collie, Doberman Pinscher, Eskimo, German Shepherd, Giant

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Sheep Dog Trials in Llangollen: Trained Collies Perform Marvels of Herding in the Cambrian Stakes, Open to the World. By Sara Bloch. 559-574, *Apr. 1940*

Hark to the Hounds. By Freeman Lloyd. Paintings by Edward Herbert Miner. Contents: Afghan Hound, American Foxhound, Basset Hound, Beagle, Bloodhound, Borzoi, or Russian Wolfhound, Deerhound, English Foxhound, Greyhound, Harrier, Irish Wolfhound, Otterhound, Rampur Hound, Saluki, Welsh Foxhound, Whippet. 453-484, *Oct. 1937*

Field Dogs in Action. By Freeman Lloyd. Paintings by Edward Herbert Miner. Contents: Chesapeake Bay Retriever, Clumber Spaniel, Cocker Spaniel, Curly-coated Retriever, Dachshund, English Setter, English Springer Spaniel, Field Spaniel, Flat-coated Retriever, German Short-haired Pointer, Golden Retriever, Gordon Setter, Irish Red Setter, Irish Water Spaniel, Labrador Retriever, Pointer, Sussex Spaniel, Wire-haired Pointing Griffon. 85-108, *Jan. 1937*

Man's Oldest Ally, the Dog: Since Cave-Dweller Days This Faithful Friend Has Shared the Work, Exploration, and Sport of Humankind. By Freeman Lloyd. Paintings by Edward Herbert Miner. Contents: Airedale Terrier, Bedlington Terrier, Bull Terrier, Cairn Terrier, Dandie Dinmont Terrier, Irish Terrier, Kerry Blue Terrier, Lakeland Terrier, Manchester Terrier, Miniature Schnauzer, Scottish Terrier, Sealyham Terrier, Skye Terrier, Smooth Fox Terrier, Standard Schnauzer, Welsh Terrier, West Highland White Terrier, Wire-haired Fox Terrier. 247-274, *Feb. 1936*

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Our Common Dogs. By Louis Agassiz Fuertes and Ernest Harold Baynes. Paintings by Louis Agassiz Fuertes. Contents: Basset, Beagle, Belgian Shepherd, Bloodhound, Brussels Griffon, Bulldogs, Chihuahua, Chow, Collies, Dachshund, Dalmatian, English Sheep-Dog, Eskimo, Foxhound, German Shepherd, Great Dane, Greyhound, Irish Wolfhound, Mastiff, Mexican Hairless, Newfoundland, Norwegian Elkhound, Otterhound, Pekingese, Persian Gazelle Hound, Pointer, Pomeranian, Poodles, Pug, Pyrenean Sheep-Dog, Retrievers, Russian Wolfhound, St. Bernard, Samoyed, Schipperke, Scottish Deerhound, Setters, Spaniels, Spitz, Terriers, Whippet; index. 201-253, *Mar. 1919*

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The Lure of the Frozen Desert: North Polar Regions. Panorama. *Dec. 1912*

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DOIG, DESMOND:

Nomination Page. In Nepal. *Oct. 1966*

Author

Sherpaland, My Shangri-La. 545-577, *Oct. 1966*

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Author-Photographer

Bhutan: Mountain Kingdom Between Tibet and India. 384-415, *Sept. 1961*

DOLAN, BROOKE, 2D:

Across Tibet from India to China. By Ilia Tolstoy. 169-222, *Aug. 1946*

DOLESH, RICHARD J.: *Author*

Lord of the Shallows–The Great Blue Heron. Photos by Cameron Davidson. 540-554, *Apr. 1984*

DOLGANS:

People of the Long Spring. By Yuri Rytkheu. Photos by Dean Conger. 206-223, *Feb. 1983*

DOLL, DON: *Photographer*

Eskimo Hunters of the Bering Sea. By Brad Reynolds. 814-834, *June 1984*

DOLLHOUSE:

Royal House for Dolls. By David Jeffery. Photos by James L. Stanfield. 632-643, *Nov. 1980*

DOLLS:

The World in Dolls. By Samuel F. Pryor. Photos by Kathleen Revis. 817-831, *Dec. 1959*

Carolyn Bennett Patterson reenacted Robert Louis Stevenson's sojourn in France's Cévennes. COTTON COULSON

See also Dolls, Miniature; Dzibilchaltun, for Temple of the Seven Dolls; Kachinas

DOLLS, Miniature:

Cuernavaca, the Sun Child of the Sierras (Mexico). By Russell Hastings Millward. Included: Miniature dolls made by Isabel Belaunsaran. 291-301, *Mar. 1911*

DOLOMITES (Mountains), Italy:

A Stroll to Venice. By Isobel Wylie Hutchison. Note: The author walked from Innsbruck, Austria, through the Tyrol and Dolomites, to Venice, Italy. 378-410, *Sept. 1951*

The Land of Contrast: Austria-Hungary. By D. W. and A. S. Iddings. 1188-1217, 1284, *Dec. 1912*

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Dolphins: Our Friends in the Sea. By Judith E. Rinard. Juvenile. 104 pages. *1986*

Amazing Animals of the Sea. Included: Pinnipeds, dolphins, sea otters, manatees, and whales. Juvenile. 104 pages. *1981*

The Trouble With Dolphins. By Edward J. Linehan. Photos by Bill Curtsinger. 506-541, *Apr. 1979*

Whales, Giants of the Sea: Wonder Mammals, Biggest Creatures of All Time, Show Tender Affection for Young, But Can Maim or Swallow Human Hunters. By Remington Kellogg. Paintings by Else Bostelmann. Included: Porpoises and Dolphins. 35-90, *Jan. 1940*

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DOLPO (Region), Nepal:

Trek to Nepal's Sacred Crystal Mountain. By Joel F. Ziskin. 500-517, *Apr. 1977*

DOMESDAY BOOK:

The Ordnance Survey of Great Britain–Its History and Object. By Josiah Pierce, Jr. 243-260, *Aug. 1890*

DOMESTIC Fowls of Field, Park, and Farmyard. Paintings by Hashime Murayama. 329-360, *Mar. 1930*

DOMESTICATING the Wild and Woolly Musk Ox. By John J. Teal, Jr. Photos by Robert W. Madden. 862-879, *June 1970*

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DOMINICA (Island), Leeward Islands, West Indies:

Hurricane! By Ben Funk. Photos by Robert W. Madden. Included: Dominica. By Fred Ward; Dynamics of a Hurricane; Into the Eye of David. By John L. Eliot; Paths of Fury–This Century's Worst American Storms. 346-379, *Sept. 1980*

Isles of the Caribbean. 215 pages. *1980*

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British West Indian Interlude. By Anne Rainey Langley. 1-46, *Jan. 1941*

Report by Robert T. Hill on the Volcanic Disturbances in the West Indies. 223-267, *July 1902*

DOMINICAN REPUBLIC:

Graveyard of the Quicksilver Galleons. By Mendel Peterson. Photos by Jonathan Blair. Note: The *Nuestra Señora de Guadalupe* and the *Conde de Tolosa* sank off the coast of the Dominican Republic in 1724 while carrying a cargo of mercury to the New World. 850-876, *Dec. 1979*

The Dominican Republic: Caribbean Comeback. By James Cerruti. Photos by Martin Rogers. 538-565, *Oct. 1977*

Amber: Golden Window on the Past. Photos by Paul A. Zahl. Text by Thomas J. O'Neill. 423-435, *Sept. 1977*

The Land Columbus Loved. By Oliver P. Newman. Included: Dominican Republic, Land of Plenty. Photos by B. Anthony Stewart. 197-224, *Feb. 1944*

Hispaniola Rediscovered. By Jacob Gayer. 80-112, *Jan. 1931*

Haiti, the Home of Twin Republics. By Sir Harry Johnston. 483-496, *Dec. 1920*

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DONINI, JIM: *Author-Photographer*

To Torre Egger's Icy Summit. 813-823, *Dec. 1976*

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Travels With a Donkey–100 Years Later. By Carolyn Bennett Patterson. Photos by Cotton Coulson. 535-561, *Oct. 1978*

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DONNAN, CHRISTOPHER B.: *Author*

Iconography of the Moche: Unraveling the Mystery of the Warrior-Priest. 551-555, *Oct. 1988*

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Exploring an Epic Year: A Message from Your Society's President and Editor. By Melville Bell Grosvenor. 874-886, *Dec. 1960*

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Wisconsin's Door Peninsula. By William S. Ellis. Photos by Ted Rozumalski. 347-371, *Mar. 1969*

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Art Treasures from the Ice Age: Lascaux Cave. By Jean-Philippe Rigaud. Photos by Sisse Brimberg and Norbert Aujoulat. 482-499, *Oct. 1988*

Exploring the Mind of Ice Age Man. By Alexander Marshack. Included: The caves of La Roche, Lascaux, Pech-Merle, Rouffignac, and the Blanchard rock shelter. NGS research grant. 64-89, *Jan. 1975*

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DORIES:

Dory on the Banks: A Day in the Life of a Portuguese Fisherman. By James H. Pickerell. 573-583, *Apr. 1968*

The Lonely Dorymen. 579A-579B, *Apr. 1968*

I Sailed With Portugal's Captains Courageous. By Alan Villiers. 565-596, *May 1952*

See also Blessing of the Fleet

DORJUN (Boat):

Inside Cape Horn. By Amos Burg. 743-783, *Dec. 1937*

DORR, GEORGE B.: *Author*

The Unique Island of Mount Desert (Maine). By George B. Dorr, Ernest Howe Forbush, and M. L. Fernald. 75-89, *July 1914*

DORR, JOHN F:

Nomination Page. *May 1977*

DORSET INUIT:

Eskimo and Viking Finds in the High Arctic: Ellesmere Island. By Peter Schledermann. Photos by Sisse Brimberg. 575-601, *May 1981*

Vanished Mystery Men of Hudson Bay. By Henry B. Collins. NGS research grant. 669-687, *Nov. 1956*

DORSETSHIRE, England. *See* Abbotsbury Swannery

DORSETT, J. H.: *Photographer*

Peacetime Plant Hunting About Peiping. By P. H. and J. H. Dorsett. 509-534, *Oct. 1937*

Mount Vernon: The Home of the First Farmer of America. 605-620, *May 1928*

DORSETT, P. H.:
Author-Photographer
Peacetime Plant Hunting About Peiping. By P. H. and J. H. Dorsett. 509-534, *Oct. 1937*

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The Lonely Dorymen. 579A-579B, *Apr. 1968*
I Sailed with Portugal's Captains Courageous. By Alan Villiers. 565-596, *May 1952*
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DORZE TRIBESPEOPLE:
Ethiopia's Artful Weavers. By Judith Olmstead. Photos by James A. Sugar. 125-141, *Jan. 1973*

DOTHAN, TRUDE:
On Assignment in Israel. *Dec. 1982*
Author
Lost Outpost of the Egyptian Empire. Photos by Sisse Brimberg. Paintings by Lloyd K. Townsend. 739-769, *Dec. 1982*

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High Adventure in the Himalayas. By Thomas Weir. 193-234, *Aug. 1952*

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Author-Photographer
Wreck of the *Coolidge*. 458-467, *Apr. 1988*
Scorpionfish: Danger in Disguise. 634-643, *Nov. 1987*
Photographer
Ghosts of War in the South Pacific. By Peter Benchley. 424-457, *Apr. 1988*
Australia's Southern Seas. By Richard Ellis. 286-319, *Mar. 1987*
Fair Skies for the Cayman Islands. By Peter Benchley. 798-824, *June 1985*
Japan's Izu Oceanic Park. By Eugenie Clark. Included: World's Largest Crustacean (Giant Spider Crab). 465-491, *Apr. 1984*
Exploring a Sunken Realm in Australia. By Hillary Hauser. 129-142, *Jan. 1984*
Hidden Life of an Undersea Desert. By Eugenie Clark. 129-144, *July 1983*
Plight of the Bluefin Tuna. By Michael J. A. Butler. Paintings by Stanley Meltzoff. 220-239, *Aug. 1982*
Eternal Sinai. By Harvey Arden. 420-461. Included: Egyptian Sector. Photos by Kevin Fleming. 430-443; Israeli Sector. Photos by David Doubilet. 444-461, *Apr. 1982*
Strange World of Palau's Salt Lakes. By William M. Hamner. 264-282, *Feb. 1982*
Sharks: Magnificent and Misunderstood. By Eugenie Clark. 138-187, *Aug. 1981*
British Columbia's Cold Emerald Sea. Text by Larry Kohl. 526-551, *Apr. 1980*
Precious Corals, Hawaii's Deep-sea Jewels. By Richard W. Grigg. 719-732, *May 1979*
Flashlight Fish of the Red Sea. By Eugenie Clark. 719-728, *Nov. 1978*
Undersea Wonders of the Galapagos. By Gerard Wellington. 363-381, *Sept. 1978*
Loch Ness: The Lake and the Legend. By William S. Ellis. Photos by Emory Kristof and David Doubilet. 759-779, *June 1977*
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Florida, Noah's Ark for Exotic Newcomers. By Rick Gore. 538-559, *Oct. 1976*
The Strangest Sea (Red Sea). By Eugenie Clark. 338-343, *Sept. 1975*
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The American Lobster, Delectable Cannibal. By Luis Marden. 462-487, *Apr. 1973*
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Braving the North Atlantic in their small dories, Portuguese fishermen pursue cod on the Grand Banks. JAMES H. PICKERELL, BLACK STAR

Stanfield and David Doubilet. 724-735, *Nov. 1972*

DOUBLE EAGLE II Has Landed! Crossing the Atlantic by Balloon. By Ben L. Abruzzo, with Maxie L. Anderson and Larry Newman. 858-882, *Dec. 1978*

DOUBLE EAGLE V (Manned Helium Balloon):

First Across the Pacific: The Flight of *Double Eagle V*. By Ben L. Abruzzo. 513-521, *Apr. 1982*

A **DOUBTFUL** Island of the Pacific. By James D. Hague. 478-489, *Dec. 1904*

DOUGLAS, MERCEDES H.:

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Photographer

Station Wagon Odyssey: Baghdad to Istanbul. By William O. Douglas. Photos by author, Mercedes H. Douglas, and W. Robert Moore. 48-87, *Jan. 1959*

West from the Khyber Pass. By William O. Douglas. Photos by Mercedes H. Douglas and author. 1-44, *July 1958*

DOUGLAS, WILLIAM O.:

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Author

Banks Island: Eskimo Life on the Polar Sea. Photos by Clyde Hare. 703-735, *May 1964*

The People of Cades Cove. Photos by Thomas Nebbia and Otis Imboden. 60-95, *July 1962*

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DOUGLAS-HAMILTON, IAIN:

Nomination Page. In Africa. *Sept. 1980*

Photographer

Africa's Elephants: Can They Survive? By Oria Douglas-Hamilton. Photos by Oria and Iain Douglas-Hamilton. 568-603, *Nov. 1980*

DOUGLAS-HAMILTON, ORIA:

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Africa's Elephants: Can They Survive? Photos by Oria and Iain Douglas-Hamilton. 568-603, *Nov. 1980*

DOUGLASS, ANDREW ELLICOTT:

Author

The Secret of the Southwest Solved by Talkative Tree Rings: Horizons of American History Are Carried Back to A. D. 700 and a Calendar for 1,200 Years Established by National Geographic Society Expeditions. 737-770, *Dec. 1929*

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The Mole Men: An Account of the Troglodytes of Southern Tunisia. By Frank Edward Johnson. 787-846, *Sept. 1911*

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Iberia's Vintage River. By Marion Kaplan. Photos by Stephanie Maze. 460-489, *Oct. 1984*

DOUTHITT, WILLIAM T.:

On Assignment on the Susquehanna River. *May 1986*

On Assignment. *June 1983*

Photographer

Susquehanna: America's Small-Town River. By Peter Miller. 352-383, *Mar. 1985*

DOVE (Sloop):

Robin Sails Home. By Robin Lee Graham. 504-545, *Oct. 1970*

World-roaming Teen-ager Sails On. By Robin Lee Graham. 449-493, *Apr. 1969*

A Teen-ager Sails the World Alone. By Robin Lee Graham. 445-491, *Oct. 1968*

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Birds of the Northern Seas. By Alexander Wetmore. Paintings by Allan Brooks. 95-122, *Jan. 1936*

DOVER, England:

Front-line Town of Britain's Siege. By Harvey Klemmer. 105-128, *Jan. 1944*

DOVES:

Game Birds of Prairie, Forest, and Tundra. By Alexander Wetmore. Paintings by Allan Brooks. 461-500, *Oct. 1936*

DOWN Devon Lanes. By Herbert Corey. 529-568, *May 1929*

DOWN East Cruise. By Tom Horgan. Photos by Luis Marden. 329-369, *Sept. 1952*

A triggerfish feasts on a prickly sea urchin in the Red Sea, having overturned it with a well-aimed squirt of water. DAVID DOUBILET

DOWN East to Nova Scotia. By Winfield Parks. 853-879, *June 1964*

DOWN Idaho's River of No Return: Salmon River. By Philip J. Shenon and John C. Reed. 95-136, *July 1936*

DOWN Mark Twain's River on a Raft. By Rex E. Hieronymus. 551-574, *Apr. 1948*

DOWN Mexico's Río Balsas. By John W. Webber. Photos by author, Kenneth Segerstrom, and Jack Breed. 253-272, *Aug. 1946*

DOWN on the Farm, Soviet Style–a 4-H Adventure. By John Garaventa. Photos by James Tobin and Carol Schmidt. 768-797, *June 1979*

DOWN the Ancient Appian Way. By James Cerruti. Photos by O. Louis Mazzatenta. 714-747, *June 1981*

DOWN the Cayman Wall. By Eugenie Clark. Included: Zones of Life. NGS research grant. 712-731, *Nov. 1988*

DOWN the Danube by Canoe. By William Slade Backer. Photos by Richard S. Durrance and Christopher G. Knight. 34-79, *July 1965*

DOWN the Grand Canyon 100 Years After Powell. By Joseph Judge. Photos by Walter Meayers Edwards. 668-713, *May 1969*

DOWN the Potomac by Canoe. By Ralph Gray. Photos by Walter Meayers Edwards. 213-242, *Aug. 1948*

DOWN the Rio Grande: Tracing this Strange, Turbulent Stream on Its Long Course from Colorado to the Gulf of Mexico. By Frederick Simpich. 415-462, *Oct. 1939*

DOWN the Susquehanna by Canoe. By Ralph Gray. Photos by Walter Meayers Edwards. 73-120, *July 1950*

DOWN to *Thresher* by Bathyscaph. By Donald L. Keach. 764-777, *June 1964*

DOYLE, C. B.: *Author*

Notes on Southern Mexico: Agricultural Products. By G. N. Collins and C. B. Doyle. 301-320, *Mar. 1911*

DOYLE, GERALD A.:

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DOYLE, ROBERT E.:

Memorial tribute. By Wilbur E. Garrett. 695, *June 1984*

President (1976-1980). 159, 224-226, Aug. 1976; 1, Jan. 1978; 427, Oct. 1980; 276, *Aug. 1982*

Board of Trustees, Vice Chairman (1980-1984). 427, *Oct. 1980*

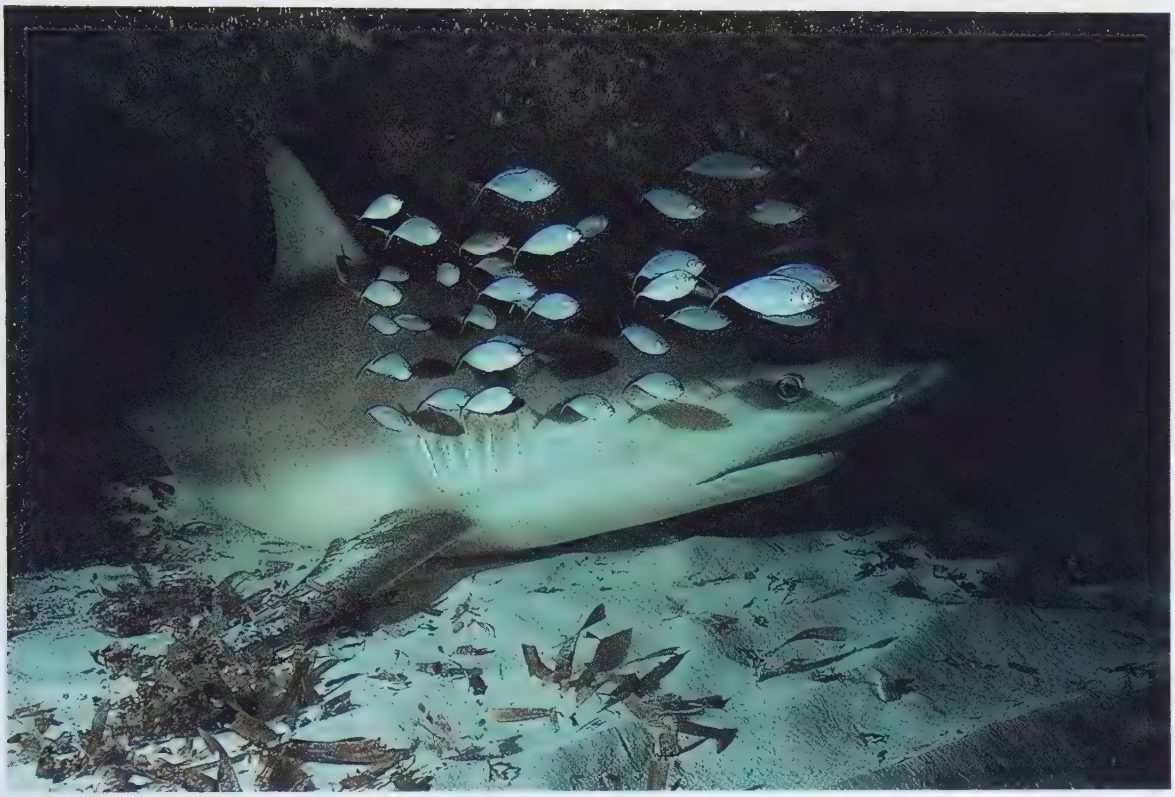
Board of Trustees. 225, *Aug. 1976*

Secretary, Assistant (1951). 225, *Aug. 1976*

Secretary, Associate (1958). 225, *Aug. 1976*

Secretary (1967). 577, 581, 587, 590, *Oct. 1967*

Vice President (1961). 577, 587, *Oct. 1967*



As if tranquilized, a reef shark rests with an entourage of barjacks in a 55-foot-deep cave off Mexico's coast. DAVID DOUBILET

Author
Our National Wildlife Refuges: A Chance to Grow. 342-349, *Mar. 1979*
Rivers Wild and Pure: A Priceless Legacy. 2-11, *July 1977*

DRAGON LIZARDS:
Dragon Lizards of Komodo. By James A. Kern. 872-880, *Dec. 1968*
A Modern Dragon Hunt on Komodo: An English Yachting Party Traps and Photographs the Huge and Carnivorous Dragon Lizard of the Lesser Sundas. By Lady Broughton. 321-331, *Sept. 1936*
Stalking the Dragon Lizard on the Island of Komodo. By W. Douglas Burden. 216-232, *Aug. 1927*

DRAGONFLIES:
Dragonflies–Rainbows on the Wing. By James G. Needham. Contents: Blue Backs, Damsons, Didymops, Eponina, Erythrodiplax umbrata, Golden Wings, Gomphus, Green Darners, Green Jackets, Hoolets, Libellula axillena, Libellula pulchella, Progomphus alachuensis, Saddlebags, Seminoles, Sky Pilots. 215-229, *Aug. 1951*

DRAGONS of the Deep. Photos by Paul A. Zahl. 838-845, *June 1978*

DRAGUIGNAN, France:
Here Rest in Honored Glory.... The United States Dedicates Six New Battle Monuments in Europe to Americans Who Gave Their Lives During World War II. By Howell Walker. Included: Rhône American Cemetery and Memorial. 739-768, *June 1957*

DRAINAGE:
Drainage of Wet Lands. 713-714, *Dec. 1906*
Area and Drainage Basin of Lake Superior. By Mark W. Harrington. 111-120, *Apr. 1897*
Geomorphology of the Southern Appalachians. By Charles Willard Hayes and Marius R. Campbell. 63-126, *May 23, 1894*
See also Reclamation

DRAKE, SIR FRANCIS:
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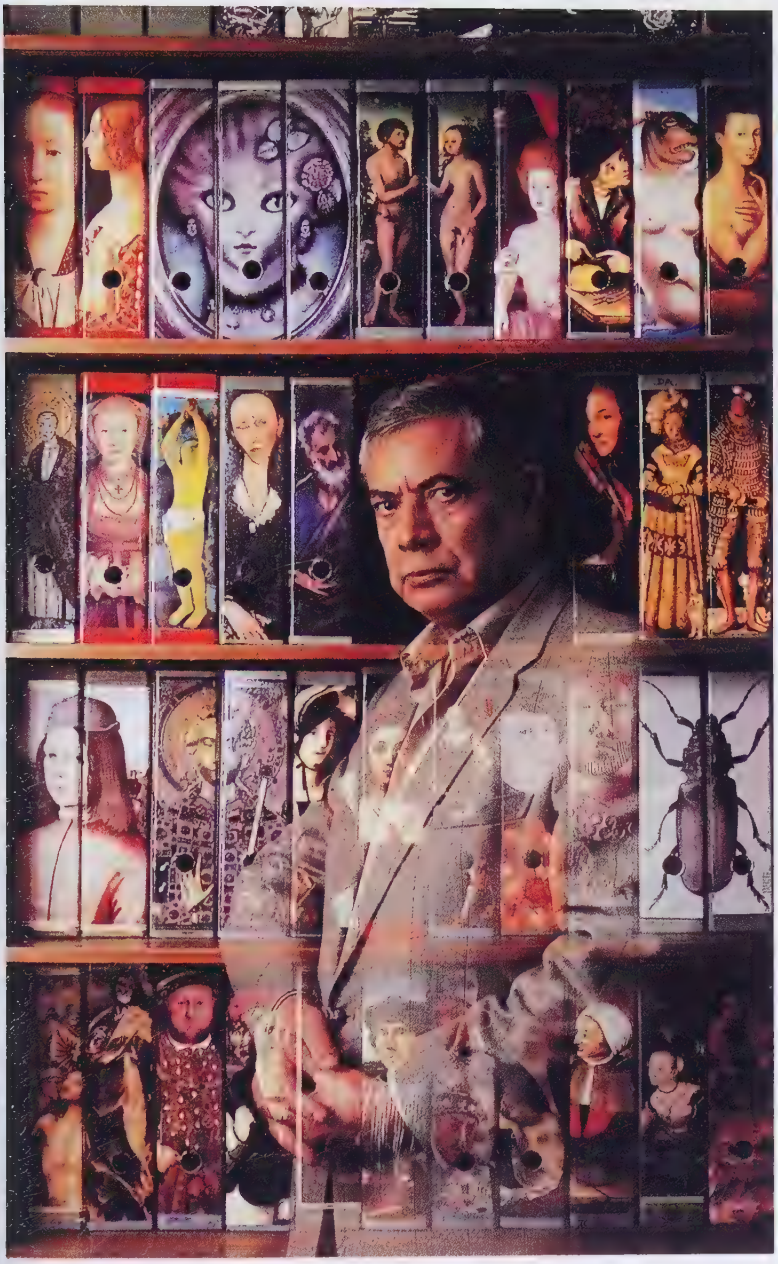

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EXTINCT SPECIES
FARMS
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FESTIVALS
FIJI ISLANDS
FIRE WALKING
FIREFLIES
FISHES
FLAGS
FLAMINGOS
FLOODS
FLORENCE
FOLK ART
FOOD CHAIN
FOSSILS
ROBERT FROST
FURS

A soft, grainy texture lends an Impressionist quality to this 1925 Autochrome of the French countryside.

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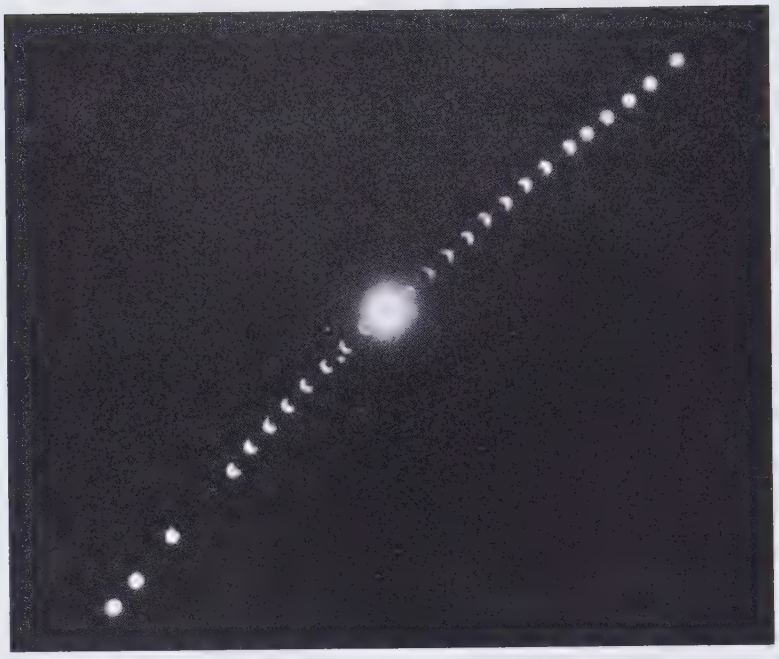

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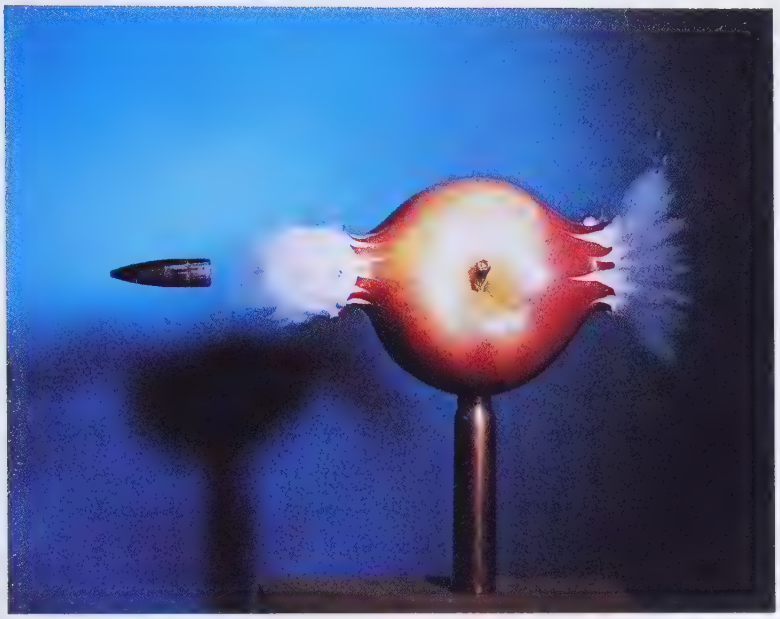

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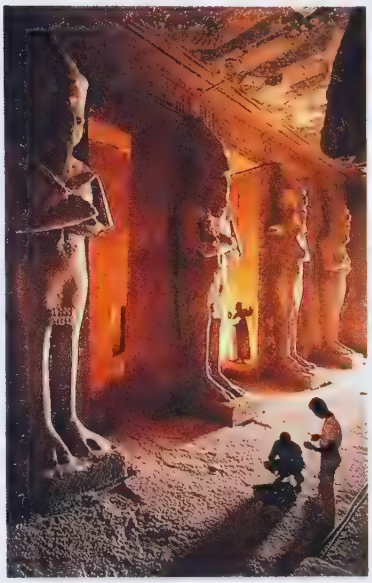

Sunlight floods the Great Temple at Abu Simbel and the 30-foot statues of Egyptian god-king Ramses II. GEORG GERSTER

Seen in a stereoscopic view, the perfectly preserved mummy of King Seti I lies in stately repose in a museum in Cairo, Egypt. UNDERWOOD & UNDERWOOD/THE BETTMANN ARCHIVE

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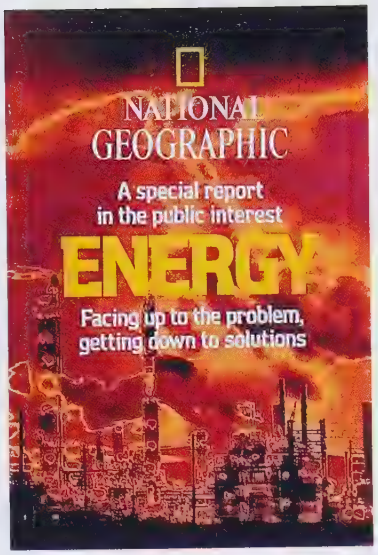

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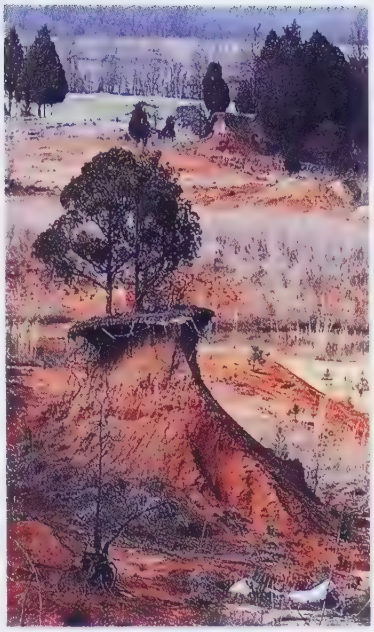

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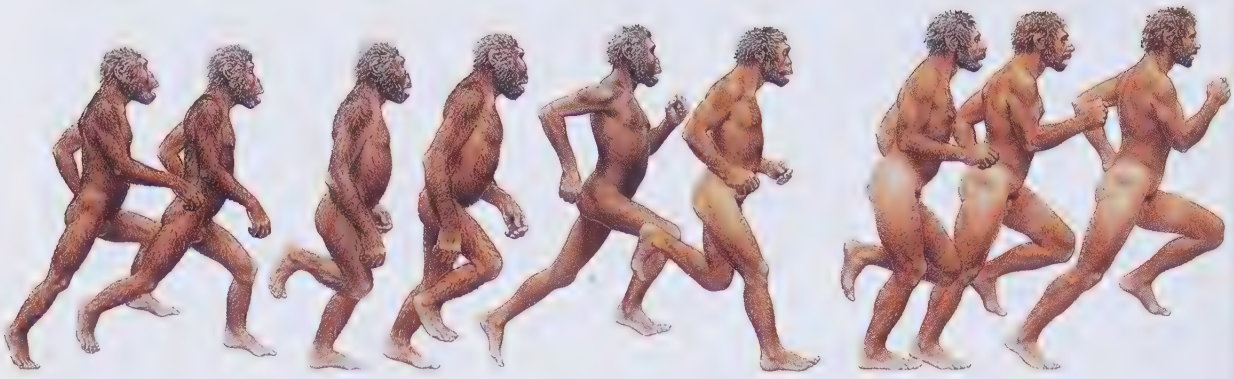

Racing across four million years of evolution, hominids show such changes as smaller jaws and larger brains. PAINTING BY © JAY H. MATTERNES

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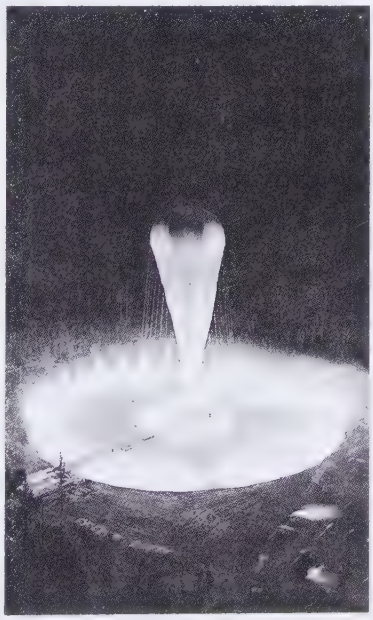

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Aztec ruler Moctezuma II greets Hernán Cortés and his conquistadores near Tenochtitlan. PAINTING BY NED SEIDLER, NGS, AND ROSALIE SEIDLER

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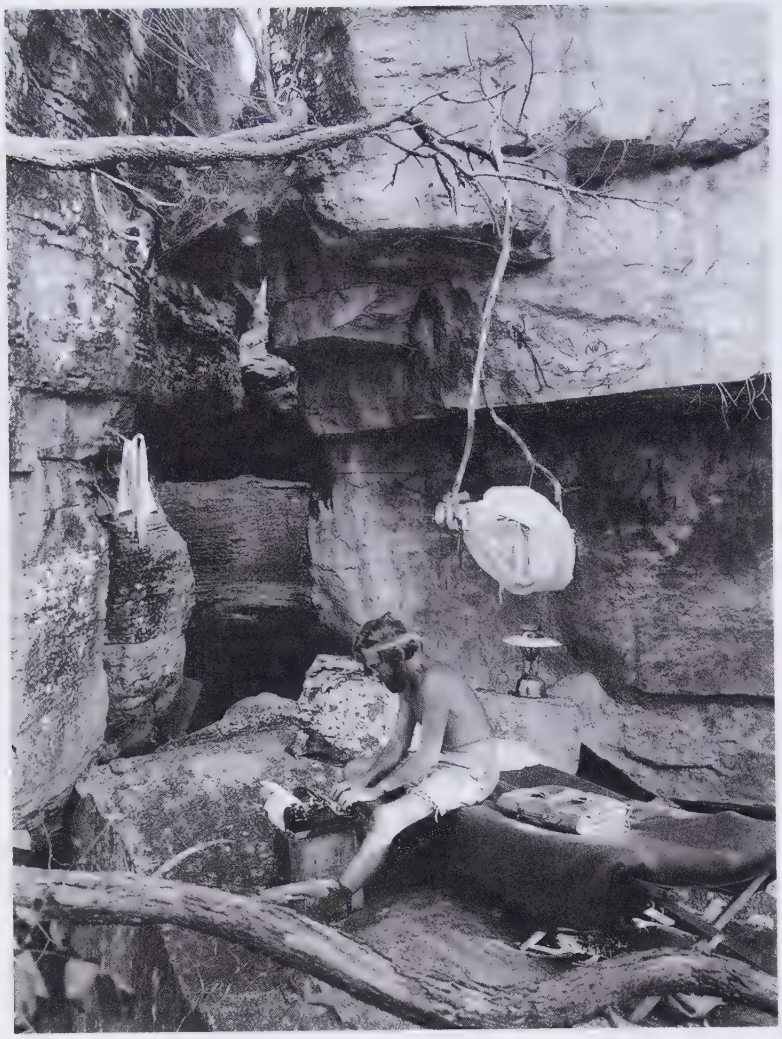

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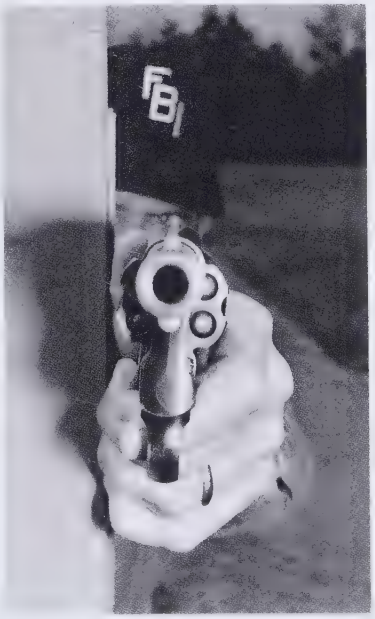

Taking careful aim, a new FBI agent learns to shoot ably with either hand.

ROBERT F. SISSON AND JOHN E. FLETCHER, BOTH NGS

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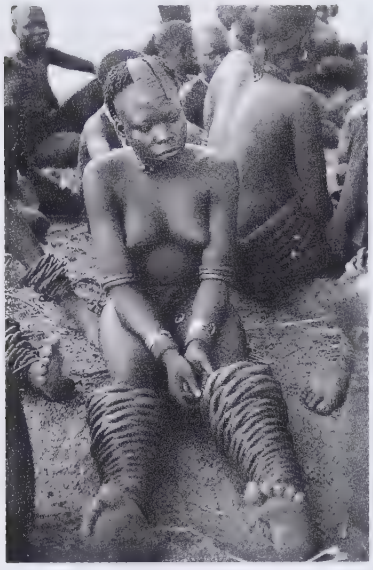

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J. Edgar Hoover, at right, meets with top FBI officials in 1961. The bureau was founded in 1908 to wage war against criminals. ROBERT F. SISSON AND JOHN E. FLETCHER, BOTH NGS

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Twenty walleyes, frozen solid, kiss the snow of Mille Lacs, Minnesota. Weighing as much as seven pounds each, they were one family's weekend catch. THOMAS J. ABERCROMBIE, NGS

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A giant Atlantic bluefin tuna falls prey to a killer whale, one of the few creatures this prodigious swimmer cannot outdistance. PAINTING BY STANLEY MELTZOFF

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Patent Plants Enrich Our World. By Orville H. Kneen. 357-378, *Mar. 1948*

The Garden Isles of Scilly: Geologists May Throw Stones at Legend of Lost Lyonnesse, But Natives Grow Flowers in Glass Houses for London. By W. Robert Moore. 755-774, *Dec. 1938*

See also Kew Gardens; Longwood Gardens

FLORIDA:

Mysteries of the Bog. By Louise E. Levathes. Photos by Fred Bavendam. Included: Peat holds clues to early American life. 397-420, *Mar. 1987*

Freshwater Turtles–Designed for Survival. By Christopher P. White. Photos by Bill Curtsinger. 40-59, *Jan. 1986*

Man and Manatee: Can We Live Together? By Alice J. Hall. Photos by Fred Bavendam. Included: Man Can Save the Manatee. By Jesse R. White. 414-418, 400-418, *Sept. 1984*

Florida–A Time for Reckoning. By William S. Ellis. Photos by Nathan Benn and Kevin Fleming. 172-219, *Aug. 1982*

Hurricane! By Ben Funk. Photos by Robert W. Madden. 346-379. Included: Dominica. By Fred Ward. 357-359; Dynamics of a Hurricane. 370-371; Into the Eye of David. By John L. Eliot. 368-369; Paths of Fury–This Century's Worst American Storms. 360-361, *Sept. 1980*

A Bad Time to Be a Crocodile. By Rick Gore. Photos by Jonathan Blair. 90-115, *Jan. 1978*

Reach for the New World. By Mendel Peterson. Photos by David L. Arnold. Paintings by Richard Schlecht. Included: Shipwrecks off the Florida coast. 724-767, *Dec. 1977*

Our Wild and Scenic Rivers: The Suwannee. By Jack and Anne Rudloe. Photos by Jodi Cobb. 20-29, *July 1977*

Florida, Noah's Ark for Exotic Newcomers. By Rick Gore. Photos by David Doubilet. 538-559, *Oct. 1976*

Atocha, Tragic Treasure Galleon of the Florida Keys. By Eugene Lyon. Included: The State of Florida's supervision of treasure trove–search, salvage, and distribution. 787-809, *June 1976*

Florida's Booming–and Beleaguered–Heartland. By Joseph Judge. Photos by Jonathan Blair. 585-621, *Nov. 1973*

Close-up U.S.A., Florida, with Puerto Rico and U. S. Virgin Islands. Text on reverse. *Nov. 1973*

Florida's Manatees, Mermaids in Peril. By Daniel S. Hartman. Photos by James A. Sugar. 342-353, *Sept. 1969*

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Drowned Galleons Yield Spanish Gold. By Kip Wagner. Photos by Otis Imboden. 1-37, *Jan. 1965*

Florida Rides a Space-age Boom. By Benedict Thielen. Photos by Winfield Parks and James P. Blair. 858-903, *Dec. 1963*

Little Horses of the Sea (Sea Horses). By Paul A. Zahl. Included: Key Largo; Sanibel Island; Tarpon Springs. 131-153, *Jan. 1959*

The Booming Sport of Water Skiing. By Wilbur E. Garrett. 700-711, *Nov. 1958*

Slow Boat to Florida *(Trade-winds)*. By Dorothea and Stuart E. Jones. 1-65, *Jan. 1958*

Limpkin, the "Crying Bird" That Haunts Florida Swamps. By Frederick Kent Truslow. 114-121, *Jan. 1958*

An Exotic New Oriole Settles in Florida. By Charles M. Brookfield and Oliver Griswold. 261-264, *Feb. 1956*

Cruising Florida's Western Waterways. By Rube Allyn. Photos by Bates Littlehales. 49-76, *Jan. 1955*

Saving Man's Wildlife Heritage. By John H. Baker. Photos by Robert F. Sisson. 581-620, *Nov. 1954*

American Wild Flower Odyssey. By P. L. Ricker. 603-634, *May 1953*

How Fruit Came to America. By J. R. Magness. Paintings by Else Bostelmann. Included: Orange, lime, and grapefruit production. 325-377, *Sept. 1951*

Men Against the Hurricane. By Andrew H. Brown. 537-560, *Oct. 1950*

Indian Life Before the Colonists Came. By Stuart E. Jones. Engravings by Theodore de Bry, 1590. 351-368, *Sept. 1947*

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South Florida's Amazing Everglades: Encircled by Populous Places Is a Seldom-visited Area of Rare Birds, Prairies, Cowboys, and Teeming Wild Life of Big Cypress Swamp. By John O'Reilly. 115-142, *Jan. 1940*

Wild Life of the Atlantic and Gulf Coasts: A Field Naturalist's Photographic Record of Nearly Half a Century of Fruitful Exploration. By George Shiras, 3d. 261-309, *Sept. 1932*

Florida–The Fountain of Youth. By John Oliver La Gorce. 1-93, *Jan. 1930*

Florida. Insets of the following areas: Miami-Palm Beach, Pensacola, Jacksonville-St. Augustine, Tampa-St. Petersburg-Sarasota. *Jan. 1930*

Certain Citizens of the Warm Sea. By Louis L. Mowbray. Paintings by Hashime Murayama. 27-62, *Jan. 1922*

Treasure-House of the Gulf Stream: The Completion and Opening of the New Aquarium and Biological Laboratory at Miami, Florida. By John Oliver La Gorce. Paintings by Hashime Murayama. 53-68, *Jan. 1921*

Interesting Citizens of the Gulf Stream. By John T. Nichols. 69-84, *Jan. 1921*

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The Geography of the Southern Peninsula of the United States. By John N. MacGonigle. 381-394, *Dec. 1896*

See also Big Cypress Swamp; Canaveral, Cape; Corkscrew Swamp; Crystal (River); Everglades; Florida Keys; Marineland; Marquesas Keys; Merritt Island National Wildlife Refuge; Miami; Tampa; Tarpon Springs

FLORIDA COAST LINE CANAL:

Miscellanea. 480, *Nov. 1898*

The Florida Coast Line Canal. 242, *May 1898*

FLORIDA ISLAND, Solomon Islands:

Adventures with the Survey Navy. By Irving Johnson. 131-148, *July 1947*

FLORIDA KEYS, Florida:

Treasure! 575, Nov. 1976; cover, *Dec. 1976*

The Lower Keys, Florida's "Out Islands." By John Scofield. Photos by Emory Kristof and Bates Littlehales. 72-93, *Jan. 1971*

Cannon on Florida Reefs Solve Mystery of Sunken Ship. By Charles M. Brookfield. 807-824, *Dec. 1941*

The First Autochromes from the Ocean Bottom Marine Life in Its Natural Habitat Along the Florida Keys Is Successfully Photographed in Colors. Photographs by W. H. Longley and Charles Martin. 56-60, *Jan. 1927*

Life on a Coral Reef: The Fertility and Mystery of the Sea Studied Beneath the Waters Surrounding Dry Tortugas. By W. H. Longley. 61-83, *Jan. 1927*

The Florida Keys. By John Gifford. 5-16, *Jan. 1906*

Across the Gulf by Rail to Key West. By Jefferson B. Browne. 203-207, *June 1896*

See also Alligator Reef; Dry Tortugas; John Pennekamp Coral Reef State Park; Key West; Tarpon Key

FLOUR:

Rediscovering America's Forgotten Crops. By Noel D. Vietmeyer. Photos by Burgess Blevins. Paintings by Paul M. Breeden. Included: Amaranth-seed flour. 702-712, *May 1981*

FLOW Onward, Connecticut! (River). Photos by B. Anthony Stewart. 409-432, *Apr. 1943*

"The **FLOWER** of Paradise": The Part Which Khat Plays in the Life of the Yemen Arab. By Charles Moser. 173-186, *Aug. 1917*

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Blossoms That Defy the Seasons. By Geneal Condon. Photos by David S. Boyer. 420-427, *Sept. 1958*

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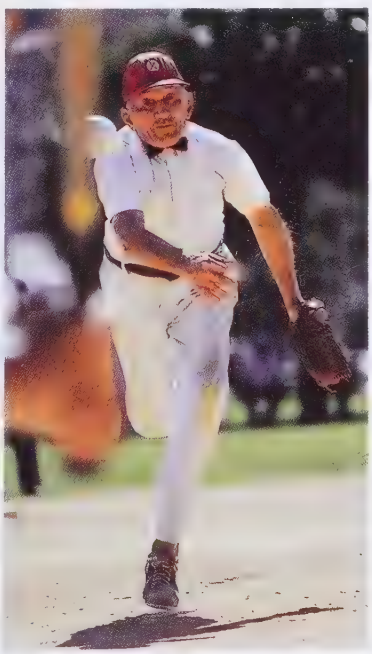
Saving the World's Largest Flower. By Willem Meijer. Photos by Edward S. Ross. Contents: *Rafflesia arnoldii.* NGS research grant. 136-140, *July 1985*

Herbs for All Seasons. By Lonnelle Aikman. Photos by Sam Abell. Picture portfolio text by Larry Kohl. 386-409, *Mar. 1983*

Hummingbirds: The Nectar Connection. By Paul W. Ewald. Photos by Robert A. Tyrrell. Included: Pollination of fuchsia, tree tobacco, woolly blue curls. 223-227, *Feb. 1982*

Britain's "French" Channel Islands. By James Cerruti. Photos by James L. Amos. 710-740, *May 1971*

The Flower Seed Growers: Gardening's Color Merchants. By Robert de Roos. Photos by Jack Fields. Included: The World of Flowers. Painting by Ned M. Seidler. 720-738, *May 1968*



Octogenarian Al Kuster pitches in a softball game limited to men 74 and older in St. Petersburg, Florida. KEVIN FLEMING

The Netherlands: Nation at War With the Sea. By Alan Villiers. Photos by Adam Woolfitt. Included: Flower bulb industry. 530-571, *Apr. 1968*

England's Scillies, the Flowering Isles. By Alan Villiers. Photos by Bates Littlehales. 126-145, *July 1967*

The Flowers That Say "Aloha." By Deena Clark. Photos by Robert B. Goodman. 121-131, *Jan. 1967*

Crossroads of the Insect World. By J. W. MacSwain. Photos by Edward S. Ross. 844-857, *Dec. 1966*

Jerusalem, My Home. By Bertha Spafford Vester. Included: Wild flower paintings. 826-847, *Dec. 1964*

Malaysia's Giant Flowers and Insect-trapping Plants. By Paul A. Zahl. 680-701, *May 1964*

A Visit to the Living Ice Age. By Rutherford Platt. 525-545, *Apr. 1957*

The World in Your Garden. Art by Else Bostelmann. 231 pages. *1957*

In the Gardens of Olympus (Washington). By Paul A. Zahl. 85-123, *July 1955*

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Patent Plants Enrich Our World. By Orville H. Kneen. Photos from U. S. Plant Patents. 357-378, *Mar. 1948*

The World in Your Garden. By W. H. Camp. Paintings by Else Bostelmann. Contents: Abelia, African-Violet, Azalea, Bellflower, Bird-of-Paradise Flower, Blackberry-Lily, Blanket-Flower, Bleeding Heart, Blue Lace-Flower, Bottle-Brush, California Poppy, Calla, Camellia, Candytuft, Canna, Cape Marigold, Castor-Oil-Plant, Catawba Rhododendron, China Aster, Chrysanthemum, Clarkia, Clematis, Common Hyacinth, Cosmos, Crown Imperial, Crown-of-Thorns, Cup-Flower, Cypress Vine, Dahlia, Daisy, East Indian Lotus, Eucalyptus (Gum-Tree), Flamboyant (Royal) Poinciana, Flame Azalea, Forsythia, Foxglove, Frangipani, French and African Marigolds, Fringed Hibiscus, Fuchsia, Garden Verbena, Gerbera, Gladiolus, Grape-Hyacinth, Hibiscus, Hollyhock, Impatiens, Japanese Iris, Japanese Wisteria, Lobelia, Lupine, Michaelmas Daisies, Morning Glory, Nasturtium, Oleander, Oriental Poppy, Oswego Tea, Pansy (Heartsease), Pelargonium ("Geranium"), Peony, Petunia, Poinsettia, Poker-Plant, Pot Marigold, Primrose, Regal Lily, Rose, Scarlet Sage, Snakes-Head (Checkered-Lily), Snapdragon, Snowdrop, Spider Flower, Spring Crocus, Star-of-Bethlehem, Stock (Gilliflower), Strawflower, Summer Perennial Phlox, Swan River Daisy, Sweet Scabious, Tiger-Flower, Travelers-Tree, Tulip, Victoria Waterlily, Wallflower, Zinnia. 1-65, *July 1947*

An Insect Community Lives in Flower Heads. By James G. Needham. 340-356, *Sept. 1946*

High Country of Colorado. By Alfred M. Bailey. Photos by author, Robert J. Niedrach, F. G. Brandenburg. Included: Arnica, Columbine, Marigolds, Shooting Stars, Snow Lily, Wild Onion, Wood Lilies. 43-72, *July 1946*

Riddle of the Aleutians: A Botanist Explores the Origin of Plants on Evermisty Islands Now Enshrouded in the Fog of War. By Isobel Wylie Hutchison. 769-792, *Dec. 1942*

Flower Pageant of the Midwest: From March to November Nature Embroiders an Ever-changing Pattern of Living Color. By Edith S. and Frederic E. Clements. Paintings by Edith S. Clements. Contents: Acanthus, Amaryllis, Aster, Bluebell, Borage, Buckwheat, Buttercup, Cactus, Caper, Dogbane, Evening Primrose, Evening Star, Gentian, Geranium, Heath, Iris, Lily, Mallow, Meadow Beauty, Mint, Morning-Glory, Mustard, Orchid, Oxalis, Pea, Phlox, Pink, Poppy, Potato, Primrose, Purslane, Snapdragon, Spiderwort, Spurge, Touch-Me-Not, Verbena, Violet, Witch Hazel. 219-271, *Aug. 1939*

The Garden Isles of Scilly: Geologists May Throw Stones at Legend of Lost Lyonnesse, But Natives Grow Flowers in Glass Houses for London. By W. Robert Moore. 755-774, *Dec. 1938*

Spring's Gay Bouquets Deck the Nation's Capital. Photos by Harrison Howell Walker. 17-24, *July 1938*

A Sunshine Land of Fruits, Flowers, Movies, and Sport (California). Photos by Clifton Adams and Fred Payne Clatworthy. 545-592, *Nov. 1934*

Under the South African Union. By Melville Chater. 391-512, *Apr. 1931*

In the Canary Islands, Where Streets Are Carpeted with Flowers. Photos by Wilhelm Tobien. 615-622, *May 1930*

California, Our Lady of Flowers. By Chapin Hall. 703-750, *June 1929*

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The Family Tree of the Flowers. By Frederic E. Clements and William Joseph Showalter. 555-563, *May 1927*

The Ashley River and Its Gardens (South Carolina). By E.T.H. Shaffer. 525-550, *May 1926*

Canyons and Cacti of the American Southwest. Photos by Edwin L. Wisherd, Jacob Gayer, Charles Martin. 275-290, *Sept. 1925*

Pages from the Floral Life of America. Paintings by Mary E. Eaton. Contents: Acanthus, Amaranth, Amaryllis, Apple, Arum, Aster, Bicknell, Bladderwort, Borage, Broom-Rape, Buckthorn, Buckwheat, Bunchflower, Caper, Chicory, Diapensia Dogwood, Evening-Primrose, Figwort, Four-O'Clock, Fumitory, Gentian, Ginseng, Gooseberry, Goosefoot, Gourd, Heath, Horsetail, Indian-pipe, Lily-of-the-Valley, Logania, Madder, Magnolia, Meadowbeauty, Milkweed, Milkwort, Mimosa, Nettle, Olive, Parsley, Passion-flower, Pea, Plantain, Pondweed, Ragweed, Rush, Saxifrage, Senna, Sundew, Waterlily. 44-75, *July 1925*

Exploring the Mysteries of Plant Life. By William Joseph Showalter. Paintings by Mary E. Eaton. Included: Alfalfa, Amsonia, Arethusa, Bindweed, Blackberry-Lily, Checkerbloom, Cobaea Pentstemon, Coneflower, Creeping Polemonium, Daylily, Goldmoss, Grays Lily, Ground-Ivy, Honeysuckle, Meadow-Parsnip, Phlox, Pitcher-plant, Poppy-Mallow, Rhododendron, Rose Pogonia, St. Johnswort, Shooting-star, Snow-on-the-Mountain, Spatterdock, Springbeauty, Wild-bergamot, Woodbetony, Woodsorrel, Yellow Ladyslipper. 581-646, *June 1924*

Familiar Grasses and Their Flowers. By E. J. Geske and W. J. Showalter. Paintings by E. J. Geske. 625-636, *June 1921*

American Berries of Hill, Dale, and Wayside. Paintings by Mary E. Eaton. 168-184, *Feb. 1919*

Our State Flowers: The Floral Emblems Chosen by the Commonwealths. By Gilbert Grosvenor. Paintings by Mary E. Eaton. Contents: Apple, Bitter Root, Cactus, Carnation, Colorado Columbine, Daisy, Golden Poppy, Goldenrod, Indian Paintbrush, Magnolia, Mistletoe, Moccasin Flower, Mountain Laurel, Orange, Oregon Grape, Pasque Flower, Peach, Pine, Red Clover, Rhododendron, Rose, Sagebrush, Sahuaro, Sego Lily, Sunflower, Syringa, Texas Bluebonnet, Trumpet Vine, Violet, Wild Prairie Rose, Wild Rose. 481-517, 567, *June 1917*

The Cultivation of the Mayflower. By Frederick V. Coville. 518-519, *May 1915*

The Great White Monarch of the Pacific Northwest (Mount Rainier). By A. H. Barnes. 593-626, *June 1912*

The Kingdom of Flowers: An Account of the Wealth of Trees and Shrubs of China and of What the Arnold Arboretum, with China's Help, Is Doing to Enrich America. By Ernest H. Wilson. 1003-1035, *Nov. 1911*

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FLUORESCENT Gems From Davy Jones's Locker. By Paul A. Zahl. 260-271, *Aug. 1963*

FLY of the Deadly Sleep. By Georg Gerster. 814-833, *Dec. 1986*

FLYCATCHERS (Birds):

Birds on the Home Front. By Arthur A. Allen. 32-56, *July 1943*

Parrots, Kingfishers, and Flycatchers: Strange Trogons and Curious Cuckoos are Pictured with these Other Birds of Color, Dash, and Courage. By Alexander Wetmore. Paintings by Allan Brooks. Included: Flycatchers and Other Friends in Feathers. 801-828, *June 1936*

FLYING. By Gilbert Grosvenor. 585-630, *May 1933*

FLYING Around the Baltic. By Douglas Chandler. 767-806, *June 1938*

FLYING Around the North Atlantic. By Anne Morrow Lindbergh. Foreword by Charles A. Lindbergh. 259-337, *Sept. 1934*

Half-hidden by a profusion of blooms, a flower seller plies his trade on the Avenida de las Delicias in Santiago, Chile, in 1921. © PUBLISHERS' PHOTO SERVICE

FLYING FORTRESSES:
8th Air Force in England. U. S. Army Air Forces official photos. 297-304, *Mar. 1945*
American Bombers Attacking from Australia. By Howell Walker. 49-70, *Jan. 1943*

FLYING FOXES (Fruit Bats):
Gentle Fliers of the African Night. By Merlin D. Tuttle. NGS research grant. 540-558, *Apr. 1986*

FLYING in France. By André de Berroeta. 9-26, *Jan. 1918*

FLYING in the "Blowtorch" Era. By Frederick G. Vosburgh. 281-322, *Sept. 1950*

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Seeking Mindanao's Strangest Creatures. By Charles Heizer Wharton. 389-408, *Sept. 1948*

FLYING Our Wounded Veterans Home. By Catherine Bell Palmer. 363-384, *Sept. 1945*

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FLYING POLE DANCE:
The Mexican Indian Flying Pole Dance. By Helga Larsen. 387-400, *Mar. 1937*

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"Flying" Squirrels, Nature's Gliders. By Ernest P. Walker. 663-674, *May 1947*

The **FLYING** Telegraph (Pigeons). By Joseph F. Spears. Official U. S. Army Signal Corps photos. 531-554, *Apr. 1947*

FLYING the "Hump" of the Andes. By Albert W. Stevens. 595-636, *May 1931*

FLYING the Pacific. By William Burke Miller. 665-707, *Dec. 1936*

FLYING the World: In a Homemade Airplane the Author and Her Husband Enjoy 16,000 Miles of Adventurous Flight Across Europe, Asia, and America. By Gladys M. Day. 655-690, *June 1932*

FLYING the World's Longest Air-Mail Route: From Montevideo, Uruguay, Over the Andes, Up the Pacific Coast, Across Central America and the Caribbean to Miami, Florida, in 67 Thrilling Flying Hours. By Junius B. Wood. 261-325, *Mar. 1930*

FOCUS on India: Festivals Across U. S. Celebrate a Diverse Culture. By John J. Putman. 460-461, *Apr. 1985*

FOCUSING on the Tournament of Roses. By B. Anthony Stewart and J. Baylor Roberts. 805-816, *June 1954*

FOEHN (Wind):
Americans Stand Guard in Greenland. By Andrew H. Brown. 457-500, *Oct. 1946*

FOLDBOATS:
Squaws Along the Yukon. By Ginny Hill Wood. 245-265, *Aug. 1957*
Entering the Front Doors of Medieval Towns: The Adventures of an American Woman and Her Daughter in a Folding Boat on Eight Rivers of Germany and Austria. By Cornelia Stratton Parker. 365-394, *Mar. 1932*

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Shakespeare Lives at the Folger. By Merle Severy. Photos by Nathan Benn. 244-259, *Feb. 1987*
Folger: Biggest Little Library in the World. By Joseph T. Foster. Photos by B. Anthony Stewart and John E. Fletcher. 411-424, *Sept. 1951*

FOLK ART:
Humble Masterpieces: Decoys. By George Reiger. Photos by Kenneth Garrett. 639-663, *Nov. 1983*
Where Magic Ruled: Art of the Bering Sea. By William W. Fitzhugh and Susan A. Kaplan. Photos by Sisse Brimberg. 198-205, *Feb. 1983*
Pueblo Pottery–2,000 Years of Artistry. By David L. Arnold. 593-605, *Nov. 1982*
The Inadan: Artisans of the Sahara. By Michael and Aubine Kirtley. 282-298, *Aug. 1979*
Mexican Folk Art. By Fernando Horcasitas. Photos by David Hiser. 648-669, *May 1978*
Kyoto and Nara: Keepers of Japan's Past. By Charles McCarry. Photos by George F. Mobley. 836-851, *June 1976*
An Ozark Family Carves a Living and a Way of Life. Photos by Bruce Dale. 124-133, *July 1975*
Pennsylvania's Old-time Dutch Treat. By Kent Britt. Photos by H. Edward Kim. 564-578, *Apr. 1973*
Human Treasures of Japan. By William Graves. Photos by James L. Stanfield. Contents: Ryujo Hori, doll maker; Gonroku Matsuda, lacquer artist; Tesshi Nagano, ironcaster; Utaemon Nakamura, Kabuki actor; Sadaichi Tsukiyama, samurai swordsmith. 370-379, *Sept. 1972*
Mountain Voices, Mountain Days (West Virginia). By Bryan Hodgson. Photos by Linda Bartlett. 118-146, *July 1972*
Easter Greetings From the Ukrainians. By Robert Paul Jordan. Photos by James A. Sugar. 556-563, *Apr. 1972*
Early America Through the Eyes of Her Native Artists. By Hereward Lester Cooke, Jr. Paintings by American primitive artists. 356-389, *Sept. 1962*
Haiti–West Africa in the West Indies. By John Scofield. 226-259, *Feb. 1961*
Japan, the Exquisite Enigma. By Franc Shor. Photos by John Launois. 733-777, *Dec. 1960*
The World in Dolls. By Samuel F. Pryor. Photos by Kathleen Revis. 817-831, *Dec. 1959*
Better Days for the Navajos. By Jack Breed. Photos by Charles W. Herbert. 809-847, *Dec. 1958*
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From Sea to Sahara in French Morocco. By Jean and Franc Shor. 147-188, *Feb. 1955*
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FOLK SONGS:
Through Ozark Hills and Hollows. By Mike W. Edwards. Photos by Bruce Dale. 656-689, *Nov. 1970*
Hunting Musical Game in West Africa. By Arthur S. Alberts. 262-282, *Aug. 1951*
Hunting Folk Songs in the Hebrides. By Margaret Shaw Campbell. 249-272, *Feb. 1947*

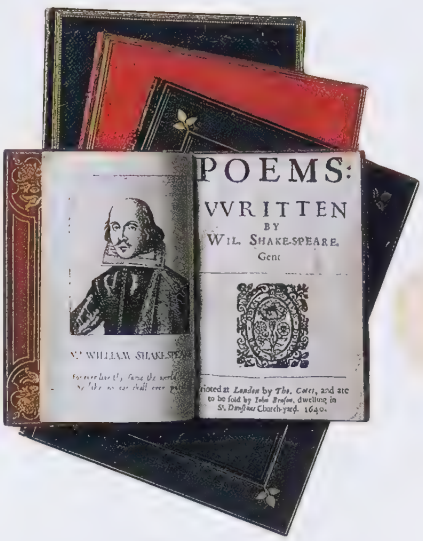
FOLKNER, ROLAND P.: *Author*
Conditions in Liberia. By Roland P. Folkner, George Sale, Emmett J. Scott. 729-741, *Sept. 1910*

FOLLIARD, EDWARD T.: *Author*
Escorting Mona Lisa to America. 838-847, *June 1963*
Martinique, Caribbean Question Mark. 47-55, *Jan. 1941*

FOLLOWING Cortés: Path to Conquest. By S. Jeffrey K. Wilkerson. Photos by Guillermo Aldana E. Paintings by Ned Seidler and Rosalie Seidler. 420-459, *Oct. 1984*

FOLLOWING the Ladybug Home. By Kenneth S. Hagen. Photos by Robert F. Sisson. 543-553, *Apr. 1970*

FOLLOWING the Reindeer With Norway's Lapps. By Sally Anderson.



The Folger Shakespeare Library contains this 1640 volume padded with many poems not penned by the Bard. NATHAN BENN

Photos by Erik Borg. 364-379, *Sept. 1977*

FOLLOWING the Tracks of a Different Man (Thoreau). By William Howarth. Photos by Farrell Grehan. 349-387, *Mar. 1981*

FOLLOWING the Trail of Lewis and Clark. By Ralph Gray. 707-750, *June 1953*

FONCK, RENÉ:

Aces Among Aces (Aviators). By Laurence La Tourette Driggs. 568-580, *June 1918*

FOOD:

Herbs for All Seasons. By Lonnelle Aikman. Photos by Sam Abell. Picture portfolio text by Larry Kohl. 386-409, *Mar. 1983*

Rediscovering America's Forgotten Crops. By Noel D. Vietmeyer. Photos by Burgess Blevins. Paintings by Paul M. Breeden. Included: Amaranth seeds; groundnuts; tepary beans. 702-712, *May 1981*

Salt–The Essence of Life. By Gordon Young. Photos by Volkmar Wentzel and Georg Gerster. 381-401, *Sept. 1977*

Editorial. By Gilbert M. Grosvenor. 1, *July 1975*

Can the World Feed Its People? By Thomas Y. Canby. 2-31, *July 1975*

The Revolution in American Agriculture. By Jules B. Billard. Photos by James P. Blair. 147-185, *Feb. 1970*

School for Survival. By Curtis E. LeMay. 565-602, *May 1953*

4-H Boys and Girls Grow More Food. By Frederick Simpich. 551-582, *Nov. 1948*

Keeping House in London. By Frances James. 769-792, *Dec. 1947*

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Your New World of Tomorrow. By F. Barrows Colton. 385-410, *Oct. 1945*

Greens Grow for GI's on Soilless Ascension. By W. Robert Moore. 219-230, *Aug. 1945*

The Delectable Shrimp: Once a Culinary Stepchild, Today a Gulf Coast Industry. By Harlan Major. 501-512, *Oct. 1944*

Britain Fights in the Fields. By Francis A. Flood. 31-65, *July 1944*

Lend-Lease Is a Two-way Benefit: Innovation in Creative Statesmanship Pools Resources of United Nations, and Supplies American Forces Around the World. By Francis Flood. 745-761, *June 1943*

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Revolution in Eating: Machine Food Age–Born of Roads, Research, and Refrigeration–Makes the United States the Best-fed Nation in History. By Jesse R. Hildebrand. 273-324, *Mar. 1942*

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America's Debt to the Hen. By Harry R. Lewis. 453-467, *Apr. 1927*

Farmers Since the Days of Noah: China's Remarkable System of Agriculture Has Kept Alive the Densest Population in the World. By Adam Warwick. 469-500, *Apr. 1927*

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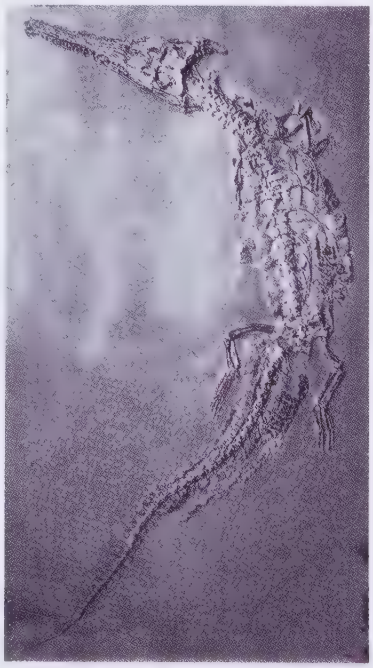

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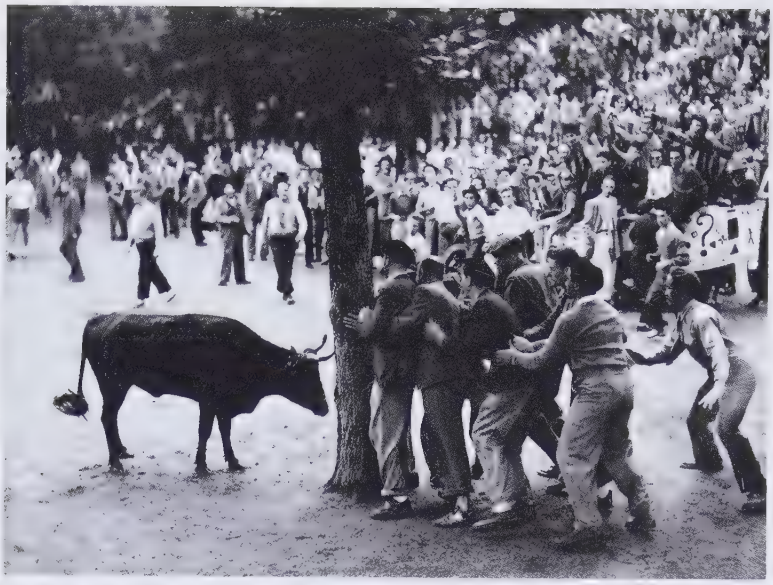
Sewing sheets and clothing, Father André helps sustain the community of monks at Our Lady of the Snows Trappist monastery in southern France. COTTON COULSON



Would-be toreros, Basques in Bayonne, France, will make themselves moving targets as bulls are set free to roam the streets. JUSTIN LOCKE

Limonest, a gastronomic society devoted to honoring the potato. 668-694, *May 1982*

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On the ancient frankincense trail, a Bedouin cradles her newborn baby near Main, Yemen. LYNN ABERCROMBIE

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Madawaska: Down East With a French Accent. By Perry Garfinkel. Photos by Cary Wolinsky. 380-409, *Sept. 1980*

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Landslides and Rock Avalanches. By Guy Elliott Mitchell. 277-287, *Apr. 1910*

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Location of the Sir John Franklin Monument. By James White. 596, *Aug. 1908*

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Fleeing Soviet tanks that rolled into Budapest in 1956, a Hungarian family in Vienna heads for a train to Munich; ultimately they reached Long Island. ROBERT F. SISSON, NGS

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The Flight of *Freedom 7*. By Carmault B. Jackson, Jr. 416-431, *Sept. 1961*
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STEVE RAYMER, NGS

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HYDROELECTRIC POWER

A glowing tower of the Golden Gate Bridge rises above the fog rolling into San Francisco Bay.

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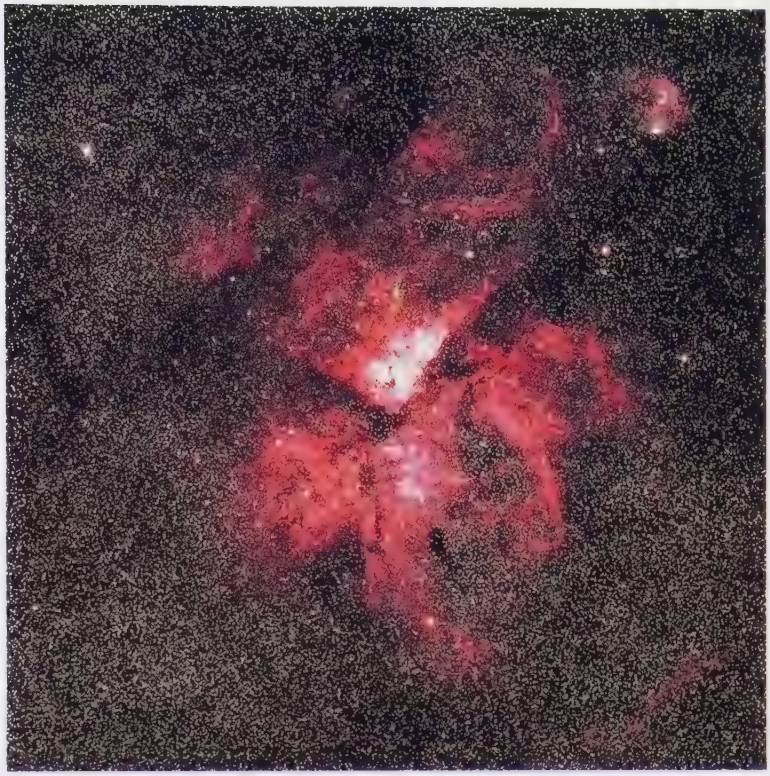

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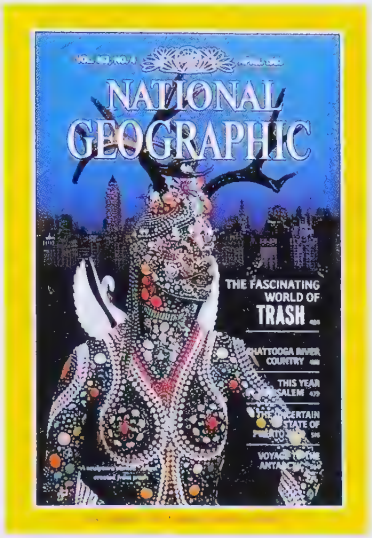

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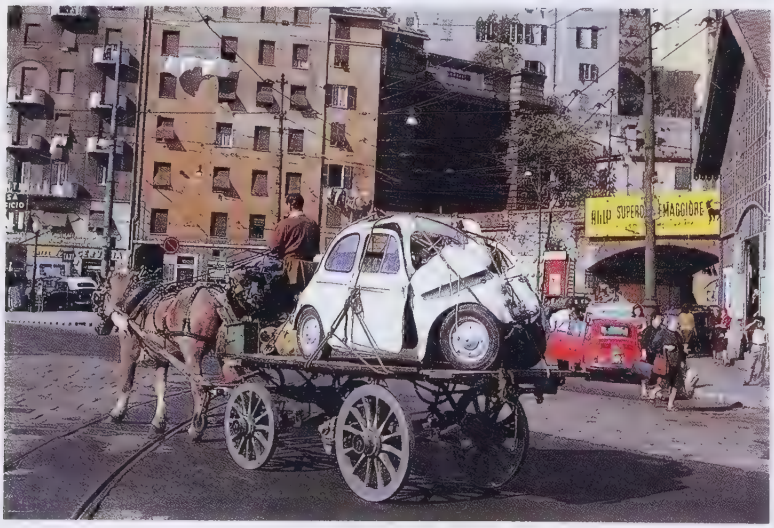

A Genoese got a horse when his pint-size car was further compacted in a 1962 collision amid the ever increasing traffic in the Italian Riviera's largest city. ALBERT MOLDVAY

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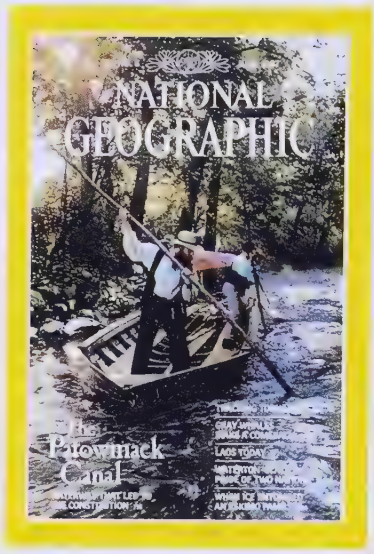

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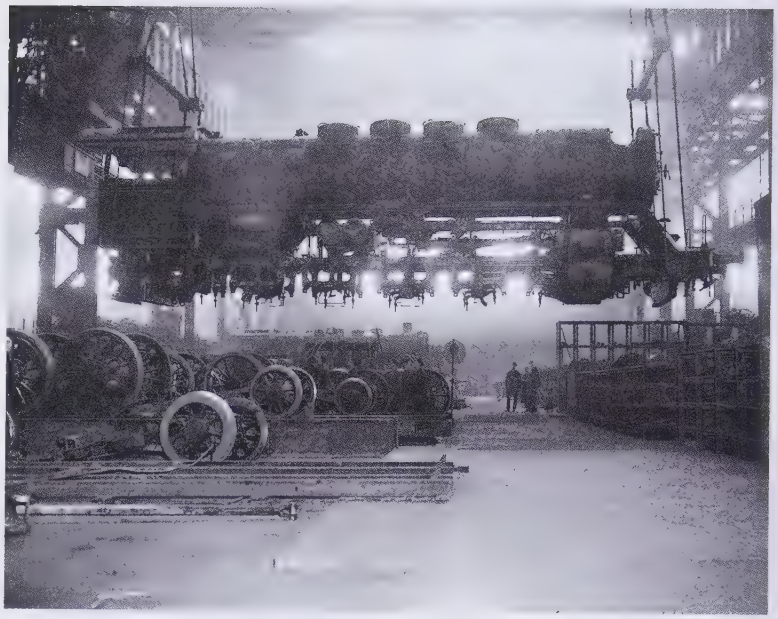

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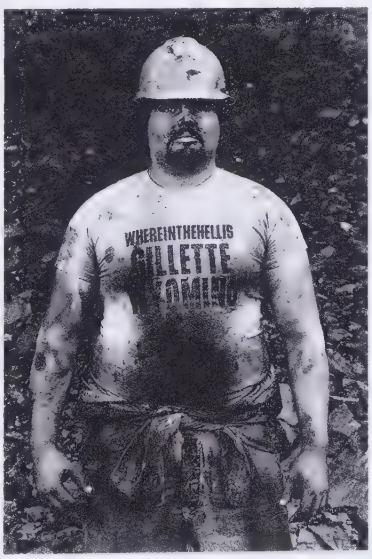

T-shirt of miner Ed Martinez makes a backhanded advertisement for a coal boomtown of the late 1970s. LOUIE PSIHOYOS

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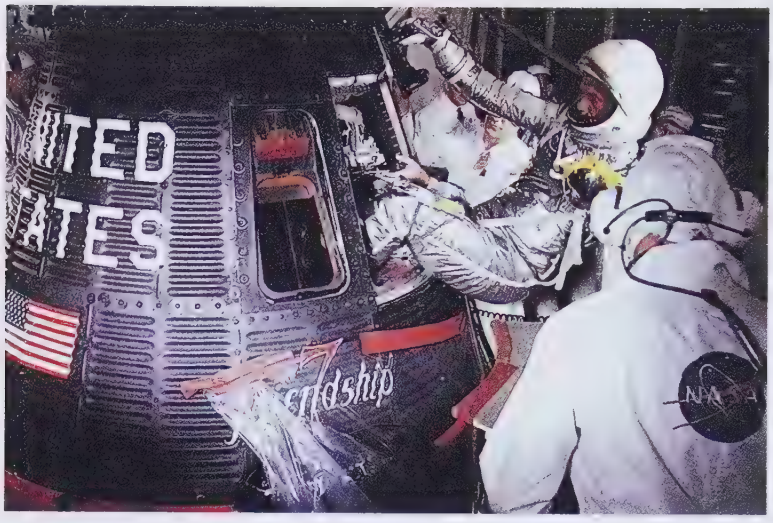

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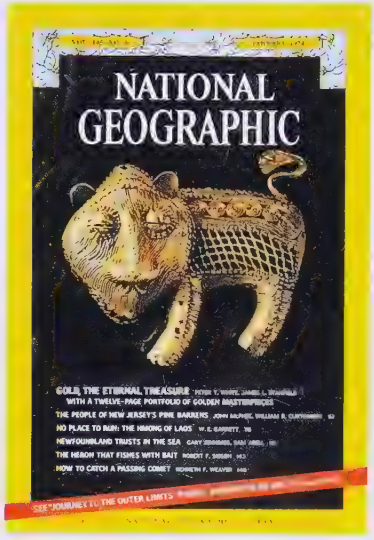
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WITH A TWELVE-PAGE PORTFOLIO OF GOLDEN MASTERPIECES
THE PEOPLE OF NEW JERSEY'S PINE BARRENS
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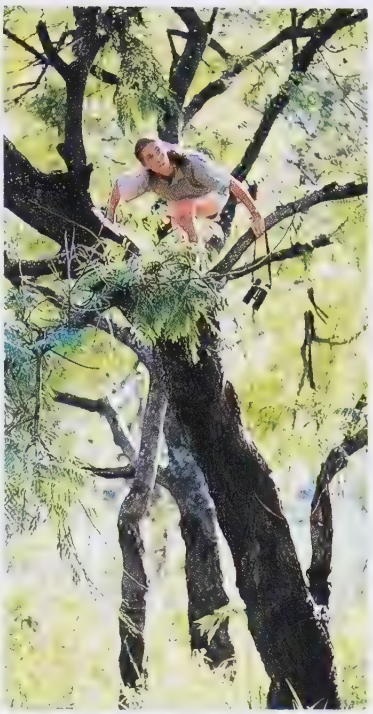

Jane Goodall takes to the trees to study chimpanzees in Tanzania's Gombe National Park. BARON HUGO VAN LAWICK

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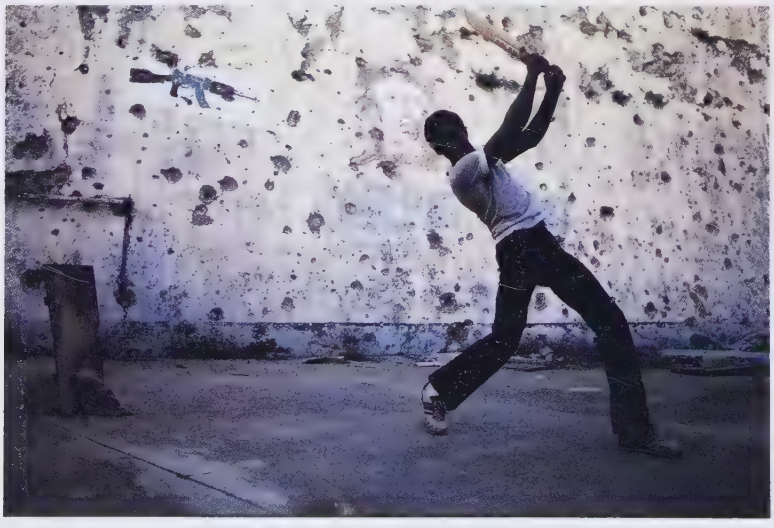

A cricket player in Grenada wields his bat by the wall where radicals gunned down some 40 people, including Prime Minister Maurice Bishop, in 1983. DAVID ALAN HARVEY

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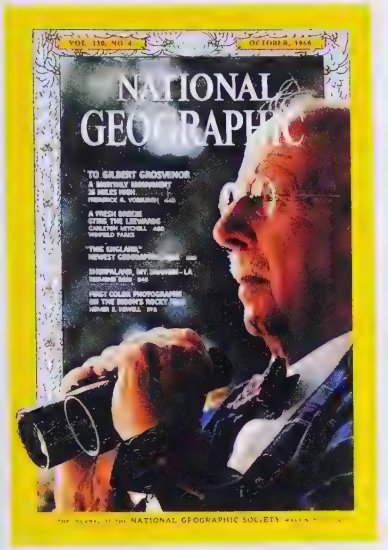
As Gilbert H. Grosvenor photographs an elaborately decorated building in Kano, Nigeria, in 1952, locals assemble for a group portrait. W. ROBERT MOORE, NGS



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Washington Through the Years: On Rolling Wooded Hills and Colonial Tobacco Fields, Where George Washington Dreamed Our Nation's

CONGRATULATIONS, DOCTOR. YOU'VE MADE GEOGRAPHY A LEADING LOCAL INDUSTRY.
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On his golden anniversary as the GEOGRAPHIC's Editor in 1949 Gilbert H. Grosvenor is congratulated by the District of Columbia. BY CLIFFORD K. BERRYMAN, THE *WASHINGTON STAR*

Great Capital, His Gorgeous Vision Comes True. 517-619, *Nov. 1931*
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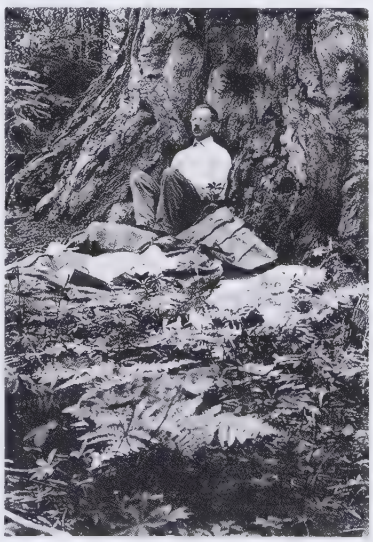

***GEOGRAPHIC* Editor Gilbert H. Grosvenor camps at the foot of a giant sequoia in 1915.** HORACE ALBRIGHT

Flags Famous in American History. By Byron McCandless and Gilbert Grosvenor. 341-361, *Oct. 1917*
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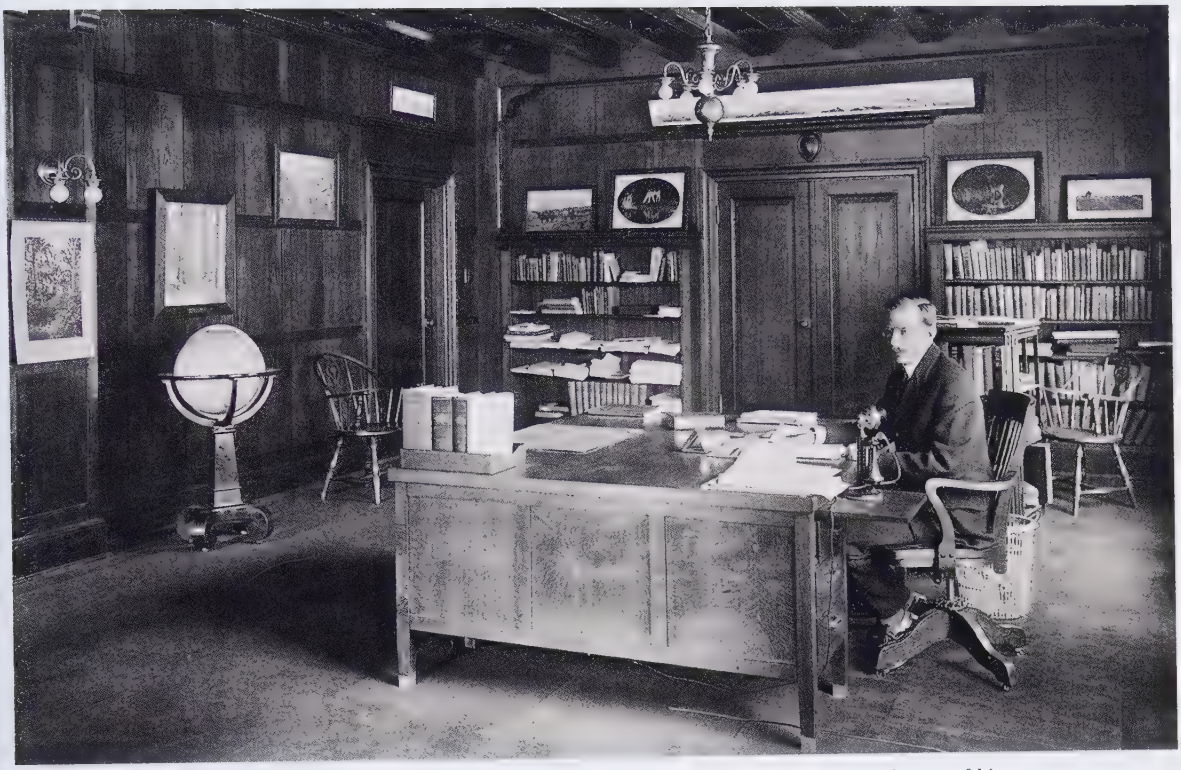

GEOGRAPHIC members got a glimpse of Editor Gilbert H. Grosvenor hard at work in 1914, the 15th year of his tenure.

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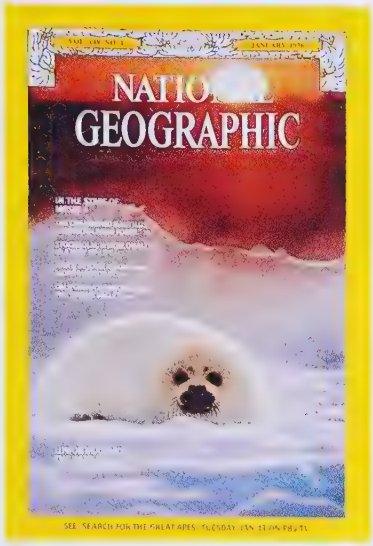

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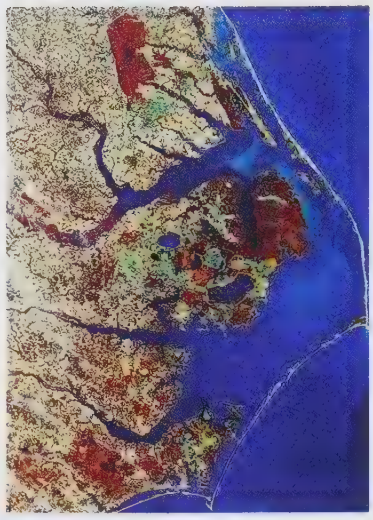

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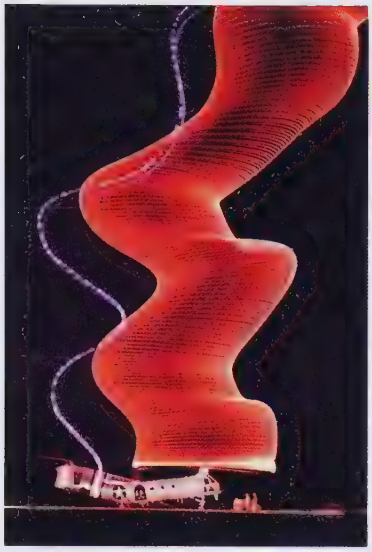

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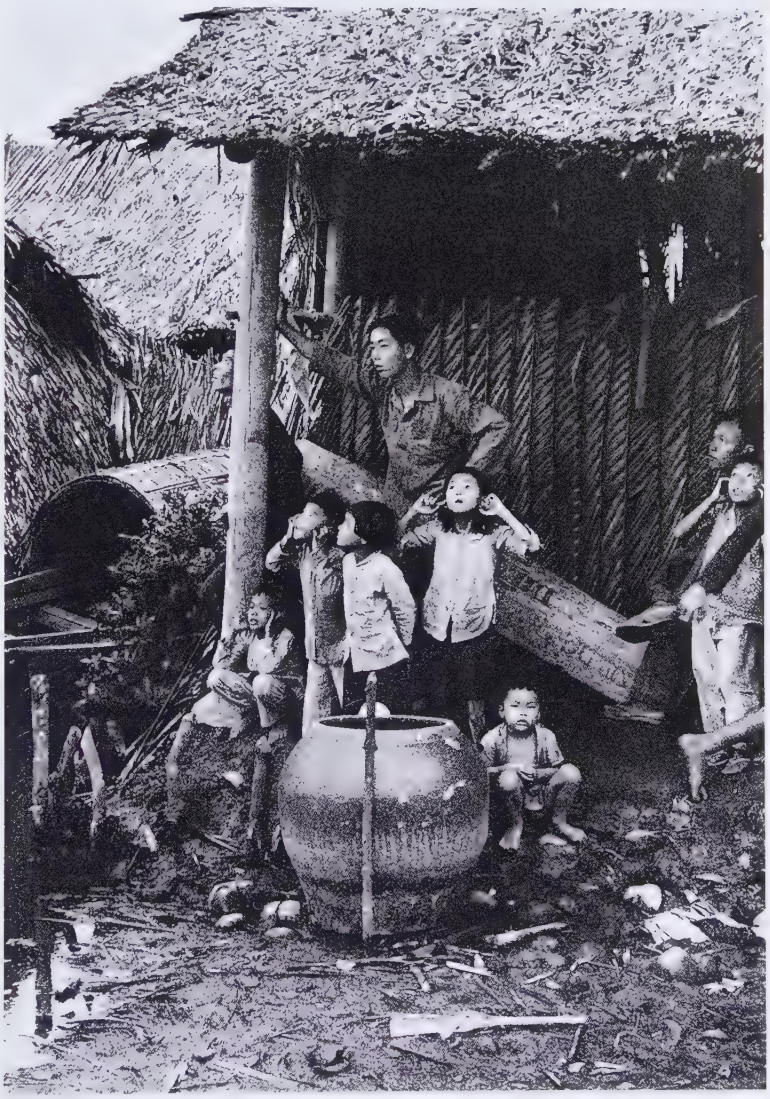

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Youngsters from Camp Timberlake of Vermont's Farm and Wilderness Foundation hike the Appalachian Trail. SAM ABELL

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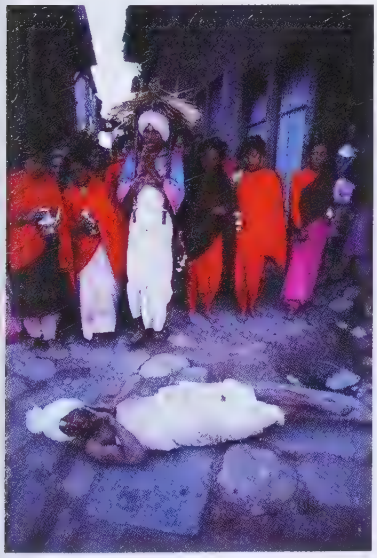

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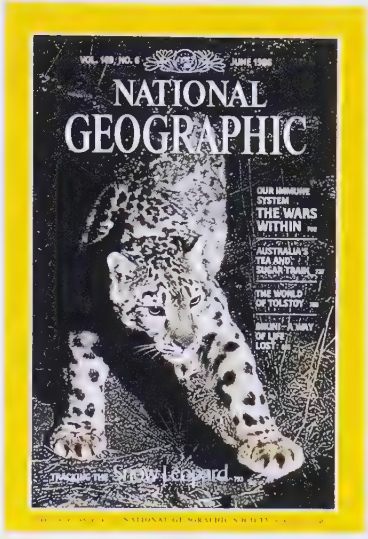

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HOUSES, Underwater. *See* Conshelf Bases; Link Igloo; SPID; Tektite II

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***Legendary hostelry for centuries, London's George Inn is mentioned in Charles Dickens's* Little Dorrit.** © BRITISH COUNCIL

HOVEY, ESTHER LANCRAFT: *Author*
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The Disposition of the Philippines. 304, *June 1898*

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The Whales Called "Killer." 220-237, *Aug. 1984*

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HSINKING, Manchuria. *See* Changchun

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Man's Eighty Centuries in Veracruz. By S. Jeffrey K. Wilkerson. Photos by David Hiser. Paintings by Richard Schlecht. NGS research grant. 203-231, *Aug. 1980*

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First President of NGS. 87, Oct. 1888; 165, Apr. 1889; 270, July 1889; 68, Apr. 1890; 294, Apr. 1891; xii, Feb. 19, 1892; xix, Feb. 20, 1893; xix, May 5, 1894; 216, June 1896; 134, Jan. 1936; 273, Mar. 1947; 517, 522, Oct. 1963; 1, 101, 103, 113, July 1965; 456, 458, Oct. 1966; 584, *Apr. 1968*

Founder of the NGS. 23, 24, Jan. 1906; 131, Jan. 1936; 387, Mar. 1955; 3, Jan. 1963; 459, Oct. 1963; 456, *Oct. 1966*

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Seal of the Society, designed under supervision of. 34, pl. 28, *July 1946*

Alaskan glacier named for. 99-100, May 1891; 7, 16, Jan. 1910; 599, June 1926; 725, June 1936; 288, *Sept. 1942*

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Toast to the memory of. 24, *Jan. 1906*

Hubbard Memorial Window, Church of the Covenant, Washington, D. C. 174-175, *May 1902*

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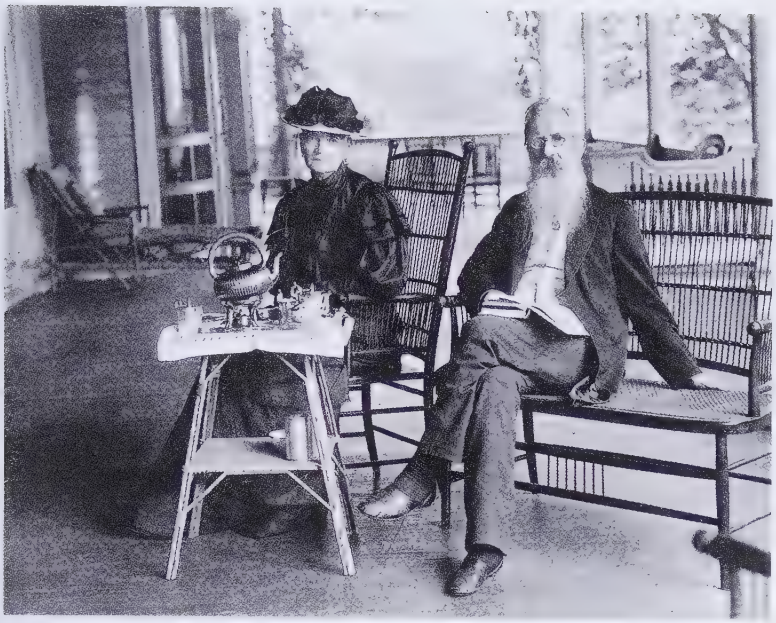

First President of the National Geographic Society, Gardiner Greene Hubbard—here with his wife, Gertrude—helped found the organization in 1888. PETER BISSETT

Gardiner Greene Hubbard: An Address delivered at the Memorial Services held at the Church of the Covenant, Washington, D. C., December 13, 1897. By Teunis S. Hamlin. 33-38, *Feb. 1898*

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1888: Introductory Address by the President, Mr. Gardiner Greene Hubbard. 2-7, *Jan. 1988*

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HUBBARD, GERARD: *Author*

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HUBBARD, JAMES MASCARENE: *Author*

Singan–The Present Capital of the Chinese Empire. 63-66, *Feb. 1901*

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The Discovery of the North Pole. Speech by Thomas H. Hubbard. 63-82, *Jan. 1910*

HUBBARD BAY, Greenland:

Three Weeks in Hubbard Bay, West Greenland. By Robert Stein. 1-11, *Jan. 1898*

HUBBARD GLACIER, Alaska-Canada:

Glaciers on the Move. By John L. Eliot. Photos by Chris Johns. Included: Anatomy of a tidewater glacier. 107-119, *Jan. 1987*

The National Geographic Society's Alaskan Expedition of 1909. By Ralph S. Tarr and Lawrence Martin. 1-54, *Jan. 1910*

HUBBARD MEDAL:

Medal designed by Laura Gardin Fraser; both sides shown. 564, *Apr. 1953*

Recipients

Astronauts John W. Young and Robert L. Crippen, for the first flight of the Space Shuttle *Columbia*. 852, *Dec. 1981*

Wetmore, Alexander. 151, *Aug. 1975*

Apollo 8 and Apollo 11 astronauts. 859-861, *June 1970*

Arnold, Henry H. 141, Feb. 1946; 868, Dec. 1957; 583, Oct. 1963; 584, *Apr. 1968*

British Mount Everest Expedition: Medal presented to Sir John Hunt, with bronze replicas to Sir John, Sir Edmund Hillary, and Tenzing Norgay (in India). 64, July 1954; 846, June 1955; 867-868, Dec. 1957; 98, Jan. 1966; 584, *Apr. 1968*

Byrd, Richard E. 377-388, Sept. 1926; 238, 239, Aug. 1927; 139, Jan. 1936; 250, Feb. 1948; 65H, July 1954; 38, 39, July 1957; 868, Dec. 1957; 574, 576, Apr. 1962; 556, Oct. 1963; 571, Oct. 1965; 584, *Apr. 1968*

Ellsworth, Lincoln. 36, July 1936; 868, Dec. 1957; 583, Oct. 1963; 689, Nov. 1964; 847, June 1967; 584, *Apr. 1968*

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Lindbergh, Charles A. 233-242, Aug. 1927; 132-140, Jan. 1928; 137, 138, Jan. 1936; 868, Dec. 1957; 563, Oct. 1963; 584, 586, *Apr. 1968*

Peary, Robert E. 49-60, Jan. 1907; 137, 149, Jan. 1936; 867, Dec. 1957; 589, Apr. 1959; 905, Dec. 1962; 514, Oct. 1963; 584, *Apr. 1968*

Trippe, Juan. 584-586, *Apr. 1968*

American Mount Everest Expedition: Medal presented to Norman G. Dyhrenfurth, leader of the expedition, with 21 gold-plated bronze replicas to individual members. 514-515, Oct. 1963; 1B, Jan. 1964; 331, Mar. 1964; 15, *July 1965*

Leakey, Dr. and Mrs. Louis S. B. 903, 905, Dec. 1962; 197, 231, *Feb. 1965*

Lindbergh, Anne Morrow. 791-794, June 1934; 136, 137, Jan. 1936; 562, *Oct. 1963*

U. S. Navy Antarctic Expeditions of 1955-1959: Medal presented to Secretary of the Navy Thomas S. Gates, Jr., with gold duplicates to Adm. Arleigh A. Burke and Rear Adm. George Dufek. 589-590, Apr. 1959; 530, *Oct. 1959*

Comdr. Robert E. Peary was awarded the Society's Hubbard Medal in 1907 for his achievements in Arctic exploration.

Fuchs, Sir Vivian. 589-590, *Apr. 1959*
Siple, Paul A. 792-793, *June 1958*
Shackleton, Sir Ernest H. 185-186, Mar. 1910; 868, *Dec. 1957*
Bartlett, Robert A. 1009, Nov. 1909; 63-82, Jan. 1910; 609, May 1946; 787, June 1949; 470, *Oct. 1953*
MacMillan, Donald Baxter. 563-564, *Apr. 1953*
President Truman presents Hubbard Medal to H. H. Arnold, Nov. 16, 1945. 141, *Feb. 1946*
Ellsworth Awarded the Hubbard Medal. Included: Acceptance speech; Exploits of Lincoln Ellsworth related by Gilbert H. Grosvenor; Presentation speech by President Franklin D. Roosevelt. 36, *July 1936*
Hubbard Medals Awarded to Stratosphere Explorers: Presentation by John J. Pershing (Recipients: Orvil A. Anderson and Albert W. Stevens). Included: Address by Gilbert H. Grosvenor. 712-714, *May 1936*
Hubbard Medal awarded to Colonel Lindbergh. 137, 138, *Jan. 1936*
President Coolidge presents Commander Byrd with the Hubbard Gold Medal. 238, 239, Aug. 1927; 139, *Jan. 1936*
Hubbard Medal presented to Amundsen by the Vice-President of the United States, Charles W. Fairbanks. 149, *Jan. 1936*
Hubbard Medal presented to Robert E. Peary. 137, 149, *Jan. 1936*
Hubbard Gold Medal presented to Anne Morrow Lindbergh by Gilbert H. Grosvenor. 136, 137, *Jan. 1936*
Hubbard Medal winner, Roy Chapman Andrews. 792, *June 1934*
The Society Awards Hubbard Medal to Anne Morrow Lindbergh. Included: Acceptance by Lindbergh; Basis of award; Design and inscription; Medal designed by Albert H. Bumstead; Messages of congratulation; Photograph of medal; Presentation by Gilbert H. Grosvenor; Previous recipients; Projection used for map design on medal. 791-794, *June 1934*
President Coolidge Bestows Lindbergh Award: The National Geographic Society's Hubbard Medal Is Presented to Aviator Before the Most Notable Gathering in the History of Washington. Included: Acceptance by Lindbergh; Inscription; Presentation by President Coolidge. 132-140, *Jan. 1928*
Air Conquest: From the Early Days of Giant Kites and Birdlike Gliders, the National Geographic Society Has Aided and Encouraged the Growth of Aviation. Included: Basis of award; Inscription; Letter from Gilbert H. Grosvenor to Charles A. Lindbergh, announcing award of Hubbard Medal to Lindbergh; Lindbergh notified by Richard E. Byrd; Photograph of medal; Previous recipients. 233-242, *Aug. 1927*
Commander Byrd Receives the Hubbard Gold Medal: The First Explorer to Reach the North Pole by Air Receives Coveted Honor at Brilliant National Geographic Society Reception. Included: Acceptance of medal by Byrd; Basis of awards; Comparison of Peary's and Byrd's achievements; Gold Medal presented to Floyd Bennett; Photographs of medals; Presentation of medals by President Coolidge; Previous recipients. 377-388, *Sept. 1926*
The National Geographic Society's Notable Year. Included: Achievements of Stefansson; Basis of award; Photograph of Peary, Stefansson, and Greely; Presentation of medal by A. W. Greely; Tribute to Stefansson by members of Greely International Polar Expedition; Tribute to Stefansson by Robert E. Peary. 338-345, *Apr. 1920*
The Race for the South Pole. Included: Acceptance speech by Sir Ernest H. Shackleton after presentation of medal by William H. Taft; Basis of award; Distinguished audience. 185-186, *Mar. 1910*

The Society's Hubbard Medal is awarded for distinction in exploration, discovery, and research.

The Discovery of the North Pole. Included: Award to Grove Karl Gilbert; Basis of awards; Inscriptions; Presentation to Robert A. Bartlett by James Bryce; Special Gold Medal presented to Peary by Willis L. Moore; Telegrams of congratulation. 63-82, *Jan. 1910*
Resolution awarding medal to Captain Bartlett. 1009, *Nov. 1909*
Honors for Amundsen. Presentation of Hubbard Gold Medal by Charles W. Fairbanks. Included: Basis of award. 55-76, *Jan. 1908*
Honors to Peary. Presentation of Hubbard Gold Medal by President Theodore Roosevelt. Included: Basis of award; Design and inscription. 49-60, *Jan. 1907*

HUBBARD MEMORIAL HALL, National Geographic Society Headquarters:
Mural paintings by the noted artist, N. C. Wyeth. 568, Nov. 1928; 93, Jan. 1929; "The Discoverer" 77, *July 1938*
A gift to the Society by the family of the first President, Gardiner Greene Hubbard. 24, Jan. 1906; 1008, Nov. 1909; 251, Feb. 1913; 124, 152, *Jan. 1936*
Photographs and sketch of. 177-181; Apr. 1904; 126, Jan. 1913; 454, 464, Apr. 1914; 669, 670, June 1923; 133, Jan. 1928; 597, May 1930; 124, *Jan. 1936*
The National Geographic Society and Its New Building. 454-470, *Apr. 1914*
The Home of the National Geographic Society. Included: Deed of trust for Hubbard Memorial Hall; Resolution of thanks to donors of building. 342, *July 1905*
The New Home of the National Geographic Society. Included: Entrance hall; Exterior; Fireplace; Formal opening; Library and meeting hall. 176-181, *Apr. 1904*
Opening of Building. 217, *May 1903*
The Hubbard Memorial Building. Included: Cornerstone contents; Dedication to Gardiner Greene Hubbard; Laying of cornerstone. 174-176, *May 1902*
Plans for Memorial Building. 406-407, *Oct. 1900*

HUBEI PROVINCE, China. *See* Hankou

HUBERMAN, M. A.: *Author*
Backwoods Japan During American Occupation. 491-518, *Apr. 1947*

HUDSON, HENRY:
North Through History Aboard *White Mist.* By Melville Bell Grosvenor. Photos by Edwin Stuart Grosvenor. 1-55, *July 1970*
Henry Hudson's River. By Willard Price. Photos by Wayne Miller. 364-403, *Mar. 1962*
Henry Hudson, Magnificent Failure: Just 330 Years Ago He and His Mutinous Crew Found Manhattan Covered With "Goodly Oakes" and Fought Indians in New York Harbor.

By Frederick G. Vosburgh. 461-490, *Apr. 1939*

HUDSON, HERNDON and MARY: *Authors*

Ali Goes to the Clinic. By Herndon and Mary Hudson. 764-766, *Dec. 1946*

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The Hudson: "That River's Alive." By Alice J. Hall. Photos by Ted Spiegel. 62-89, *Jan. 1978*

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Here's New York Harbor. By Stuart E. Jones. Photos by Robert F. Sisson and David S. Boyer. 773-813, *Dec. 1954*

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Atlantic Estuarine Tides. By Mark S. W. Jefferson. 400-409, *Sept. 1898*

HUDSON BAY, and Region, Canada:

Henry Hudson's Changing Bay. By Bill Richards. Photos by David Hiser. 380-405, *Mar. 1982*

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The Hudson's Bay Company: Canada's Fur-Trading Empire. By Peter C. Newman. Photos by Kevin Fleming. 192-229, *Aug. 1987*

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The Northwest Passes to the Yukon. By Eliza R. Scidmore. 105-112, *Apr. 1898*

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Oregon: Its History, Geography, and Resources. By John H. Mitchell. 239-284, *Apr. 20, 1895*

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Behind the Headlines in Viet Nam. By Peter T. White. Photos by Winfield Parks. 149-189, *Feb. 1967*

Drawn by the aroma of frying bacon, a polar bear near Churchill, Manitoba, drops in on a visiting National Geographic Society television documentary crew. DAVID H SER

Portrait of Indochina. By W. Robert Moore and Maynard Owen Williams. Paintings by Jean Despujols. 461-490, *Apr. 1951*

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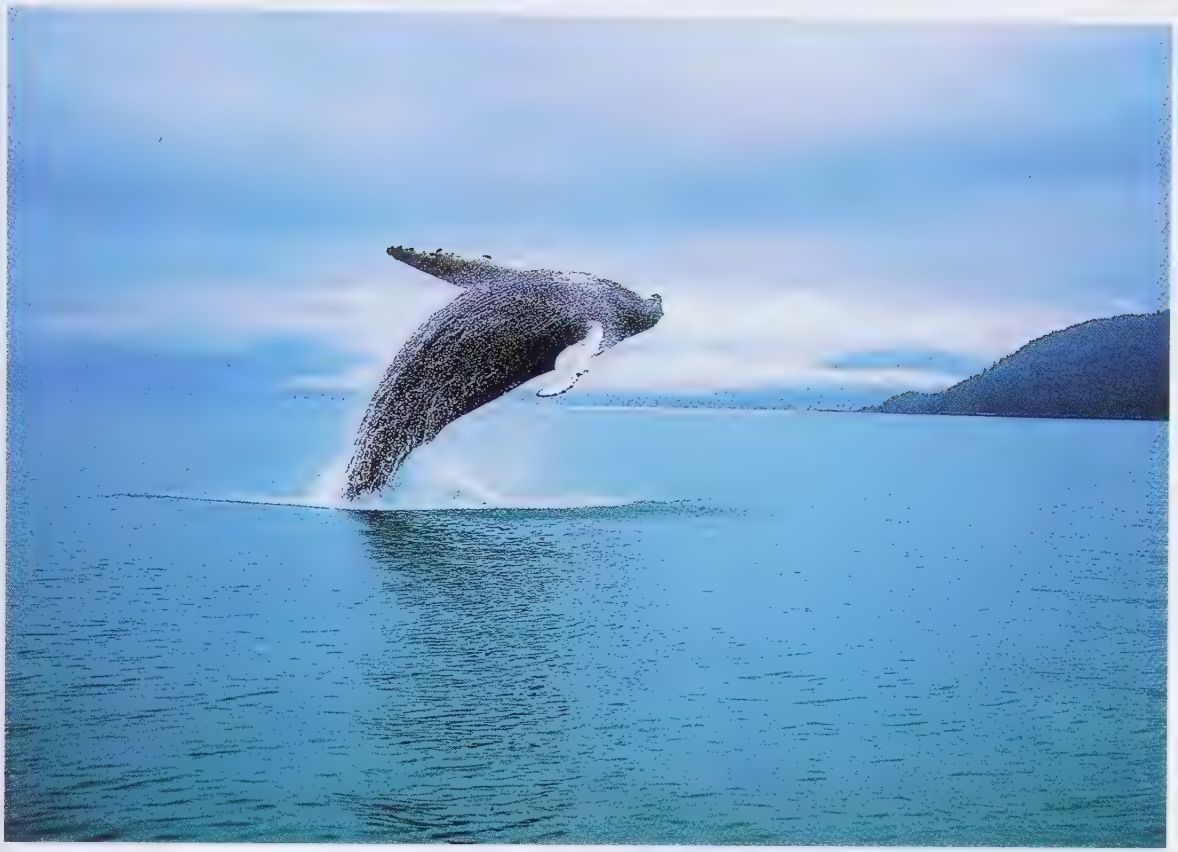

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IBISES
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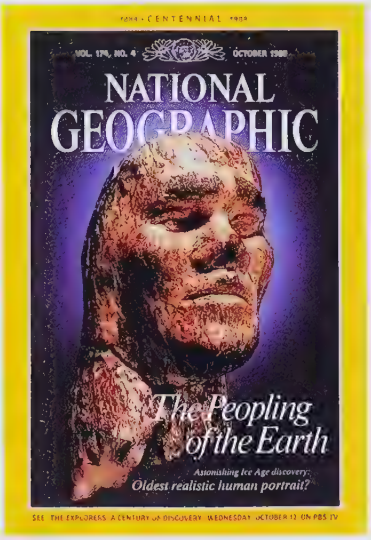
JAGANNATH FESTIVAL
JAMES BAY
JAPANESE ART
JELLYFISHES
JERUSALEM
JET AIRCRAFT
JEWELRY
JOAN OF ARC
JUPITER

A caravan creeps up a Himalayan pass in Ladakh, India's most remote region.

THOMAS J. ABERCROMBIE, NGS



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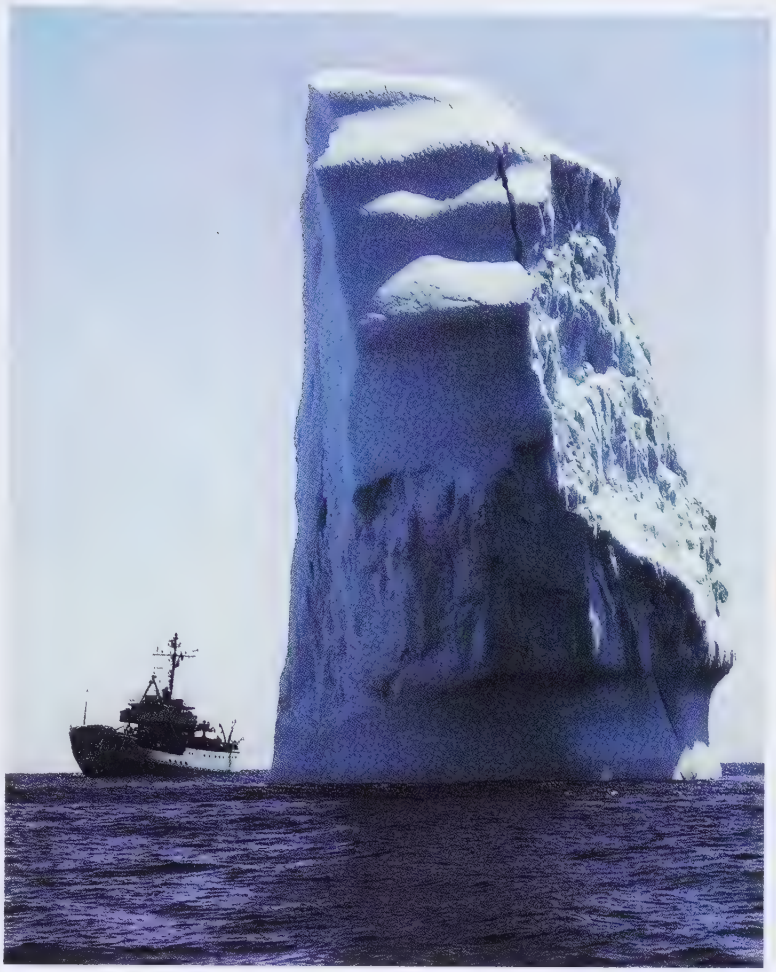

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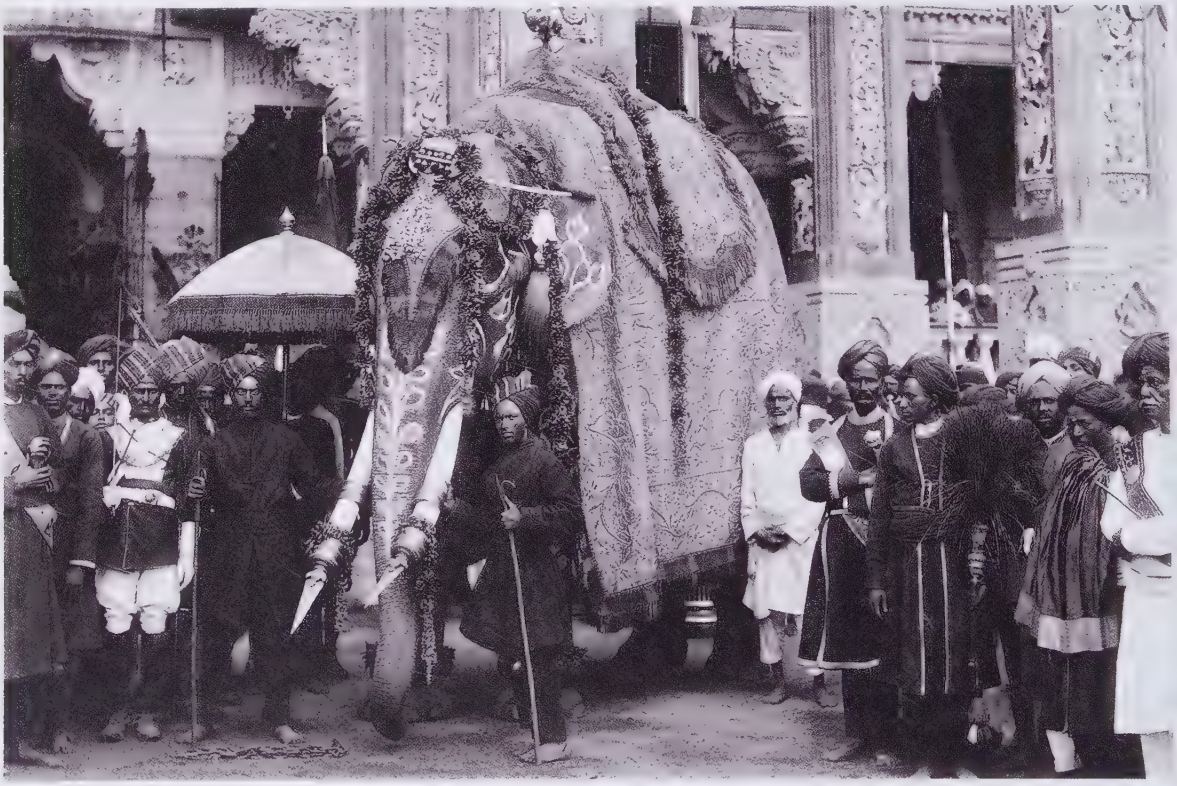

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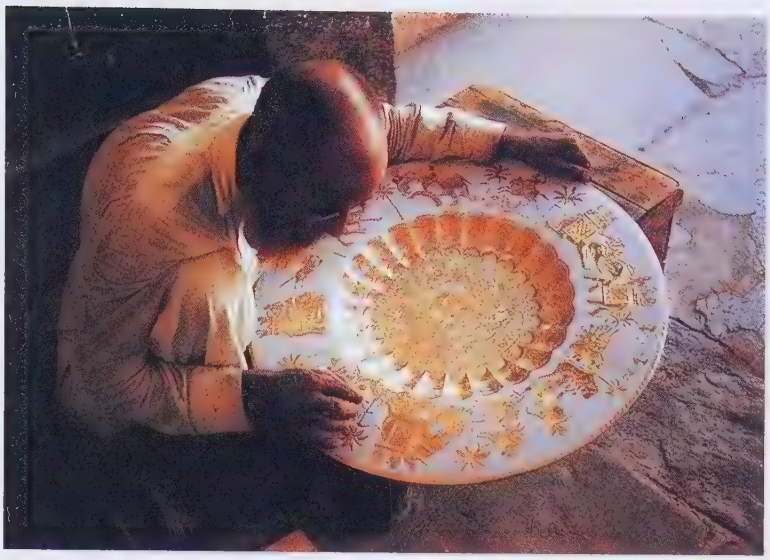
Who Were the "Mound Builders"? By George E. Stuart. 783-801, *Dec. 1972*



With unwavering hand, a master craftsman in Jaipur, India, adds the finishing touches to an enameled tray depicting hunting scenes. MELVILLE BELL GROSVENOR, NGS

Exploring Ancient Panama by Helicopter. By Matthew W. Stirling. Photos by Richard H. Stewart. NGS research grant. 227-246, *Feb. 1950*
Exploring the Past in Panama. By Matthew W. Stirling. Photos by Richard H. Stewart. NGS research grant. 373-399, *Mar. 1949*
"Pyramids" of the New World. By Neil Merton Judd. 105-128, *Jan. 1948*

INDIAN OCEAN:
Coelacanths, the Fish That Time Forgot. Article and photos by Hans Fricke. 824-838, *June 1988*
Rare Look At Sperm and Blue Whales, The Unknown Giants. By Hal Whitehead. Photos by Flip Nicklin. 774-789, *Dec. 1984*
In the Wake of Sindbad. By Tim Severin. Photos by Richard Greenhill. 2-41, *July 1982*
Crosscurrents Sweep the Indian Ocean. By Bart McDowell. Photos by Steve Raymer. 422-457, *Oct. 1981*
Science Explores the Monsoon Sea. By Samuel W. Matthews. Photos by Robert F. Sisson. 554-575, *Oct. 1967*
❁ *Indian Ocean Floor. Oct. 1967*
Exploring Davy Jones's Locker with *Calypso*. By Jacques-Yves Cousteau. Photos by Luis Marden. NGS research grant. 149-161, *Feb. 1956*
Camera Under the Sea. By Luis Marden. NGS research grant. 162-200, *Feb. 1956*
Calypso Explores for Underwater Oil. By Jacques-Yves Cousteau. NGS research grant. 155-184, *Aug. 1955*
Yankee Roams the Orient. By Irving and Electa Johnson. 327-370, *Mar. 1951*
❁ *Indian Ocean, including Australia, New Zealand and Malaysia. Mar. 1941*
Fishing for Pearls in the Indian Ocean. By Bella Sidney Woolf. 161-183, *Feb. 1926*
See also Andaman Islands; Madagascar; Maldives Republic; Seychelles; Sri Lanka; Zanzibar; *and* Dhows

INDIAN Shangri-La of the Grand Canyon. By Jay Johnston. Photos by Terry Eiler. 355-373, *Mar. 1970*

INDIAN TERRITORY, U. S.:
The Five Civilized Tribes and the Survey of Indian Territory. By C. H. Fitch. 481-491, *Dec. 1898*
Survey and Subdivision of Indian Territory. By Henry Gannett. 112-115, *Mar. 1896*

INDIAN Tribes of Pueblo Land. By Matthew W. Stirling. Paintings by W. Langdon Kihn. 549-596, *Nov. 1940*

The **INDIAN** Tribes of Southern Patagonia, Tierra del Fuego, and the Adjoining Islands. By J. B. Hatcher. 12-22, *Jan. 1901*

The **INDIAN** Village of Baum (Ohio). By H. C. Brown. 272-274, *July 1901*

INDIANA:
❁ *Close-up: U.S.A., Illinois, Indiana, Ohio, and Kentucky.* Text on reverse. *Feb. 1977*
Indiana's Self-reliant Uplanders. By James Alexander Thom. Photos by J. Bruce Baumann. 341-363, *Mar. 1976*
Vacation Tour Through Lincoln Land. By Ralph Gray. 141-184, *Feb. 1952*
So Much Happens Along the Ohio River. By Frederick Simpich. Photos by Justin Locke. 177-212, *Feb. 1950*
Mapping the Nation's Breadbasket. By Frederick Simpich. 831-849, *June 1948*
Indiana Journey. By Frederick Simpich. Included: Hoosier Haunts and Holidays. Photos by Willard R. Culver. 267-320, *Sept. 1936*
Indiana's Unrivaled Sand-Dunes–A National Park Opportunity. By Orpheus Moyer Schantz. 430-441, *May 1919*

See also Columbus, Indiana; Indianapolis

INDIANAPOLIS, Indiana:

Indianapolis: City on the Rebound. By Louise E. Levathes. Photos by Sandy Felsenthal. 230-259, *Aug. 1987*

INDIANS, East. *See* East Indians

INDIANS OF CENTRAL AMERICA:

America's Ancient Cities. By Gene S. Stuart. Photos by Richard Alexander Cooke III. Art by H. Tom Hall. 199 pages. *1988*

Panama: Ever at the Crossroads. By Charles E. Cobb, Jr. Photos by Danny Lehman. Included: Cuna, Guaymí. 466-493, *Apr. 1986*

Lost Empires, Living Tribes. 402 pages. *1982*

The Mighty Aztecs. By Gene S. Stuart. Photos by Mark Godfrey. Art by Louis S. Glanzman. 199 pages. *1981*

The Mysterious Maya. By George E. and Gene S. Stuart. Photos by David Alan Harvey and Otis Imboden. 199 pages. *1977*

Christopher Columbus and the New World He Found. By John Scofield. Photos by Adam Woolfitt. Included: Guaymis. 584-625, *Nov. 1975*

Archeological Map of Middle America, Land of the Feathered Serpent. Text on reverse. *Oct. 1968*

We Drove Panama's Darién Gap. By Kip Ross. Included: Chocós, Cuna. 368-389, *Mar. 1961*

Indians of the Americas. 431 pages. 1955; rev. ed. *1961*

Easter Week in Indian Guatemala. By John Scofield. 406-417, *Mar. 1960*

Hunting Prehistory in Panama Jungles. By Matthew W. Stirling. Photos by Richard H. Stewart. NGS research grant. 271-290, *Aug. 1953*

Exploring Ancient Panama by Helicopter. By Matthew W. Stirling. Photos by Richard H. Stewart. Included: Pre-Columbian grave artifacts. NGS research grant. 227-246, *Feb. 1950*

Exploring the Past in Panama. By Matthew W. Stirling. Photos by Richard H. Stewart. Included: Guaymi Indians, Coclé Indian culture, and pottery from the El Hatillo and Monagrillo sites. NGS research grant. 373-399, *Mar. 1949*

"Pyramids" of the New World. By Neil Merton Judd. Included: Copán in Honduras; Piedras Negras and Tikal in Guatemala. 105-128, *Jan. 1948*

To Market in Guatemala. By Luis Marden. Photos by Giles Greville Healey and Charles S. Pineo. 87-104, *July 1945*

The Land That Links the Americas (Panama). Photos by Luis Marden. Included: Choco and San Blas Indians. 601-624, *Nov. 1941*

Gene and George Stuart ponder glyphs on a doorjamb carved by Maya Indians at Xcalumkin, one of the archaeological sites included on a 1968 supplement map (below). OTIS IMBODEN, NGS

Guatemala Interlude: In the Land of the Quetzal a Modern Capital Contrasts With Primitive Indian Villages and the "Pompeii of America." Included: Cakchiquels, Quichés, Santo Tomás, Sololás, Todos Santos, and Tzutuhiles. By E. John Long. 429-460, *Oct. 1936*

Guatemala: Land of Volcanoes and Progress: Cradle of Ancient Mayan Civilization, Redolent With Its Later Spanish and Indian Ways, Now Reaping Prosperity from Bananas and Coffee. By Thomas F. Lee. 599-648, *Nov. 1926*

Little-Known Parts of Panama. By Henry Pittier. Included: Chocós, Guaymis, and San Blas Indians. 627-662, *July 1912*

Costa Rica. By Ricardo Villafranca. Included: Talamanca Indians. 143-151, *May 1897*

See also Maya; Quiché Indians; San Blas Indians

INDIANS OF NORTH AMERICA:

Piecing Together an Indian Heritage. Geographica. *Nov. 1988*

Remington, the Man and the Myth. By Louise E. Levathes. Photos by Chris Johns. 200-231, *Aug. 1988*

Editorial. By Wilbur E. Garrett. 295, *Mar. 1988*

Exploring Our Forgotten Century: Between Columbus and Jamestown. By Joseph Judge. Photos by Bill Ballenberg. Paintings by John Berkey. 330-363, *Mar. 1988*

America's Ancient Cities. By Gene S. Stuart. Photos by Richard Alexander Cooke III. Art by H. Tom Hall. 199 pages. *1988*

"The Fire That Never Dies." By Harvey Arden. Photos by Steve Wall. Included: Mohawks, Oneidas, Onondagas, Cayugas, Senecas, Tuscaroras. 375-403, *Sept. 1987*

Ghosts on the Little Bighorn. By Robert Paul Jordan. Photos by Scott Rutherford. Included: Cheyenne, Sioux. 787-813, *Dec. 1986*

Life and Death on the Oregon Trail: The Itch to Move West. By Boyd Gibbons. Photos by James L. Amos. Included: Plains Indians, Blackfeet. 147-177, *Aug. 1986*

The Untamed Fraser River, British Columbia's Lifeline. By David S. Boyer. Photos by Chris Johns. Included: Cheslatta Indians. 44-75, *July 1986*

Sam Houston: A Man Too Big for Texas. By Bart McDowell. Photos by Charles O'Rear. Included: Cherokee, Creek, Osage. 311-329, *Mar. 1986*

Editorial. By Wilbur E. Garrett. 141, *Feb. 1986*

C. M. Russell, Cowboy Artist. By Bart McDowell. Photos by Sam Abell. Included: Cree, Crow, Flathead, and Blood Indians of Alberta. 60-95, *Jan. 1986*

Daniel Boone, First Hero of the Frontier. By Elizabeth A. Moize. Photos by William Strode. Included: The Warriors' Path, traveled by Cherokee and Shawnee. 812-841, *Dec. 1985*

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Atlantic Gateways, The Making of America series. Included: Delaware, Maryland, New Jersey, New York, Pennsylvania, northern Virginia, West Virginia, and in Canada, southern Ontario and southern Quebec. On reverse: Indians and Trade, Nation in the Making, Peopling of the Gateways, Race for the Hinterlands, Growth of Industry, Spreading Urban Corridors. *Mar. 1983*

Peoples of the Arctic. 144-223. I. Introduction by Joseph Judge. 144-149; II. Hunters of the Lost Spirit: Alaskans, Canadians. By Priit J. Vesilind. Photos by David Alan Harvey. 150-189, *Feb. 1983*

Peoples of the Arctic; Arctic Ocean. Feb. 1983

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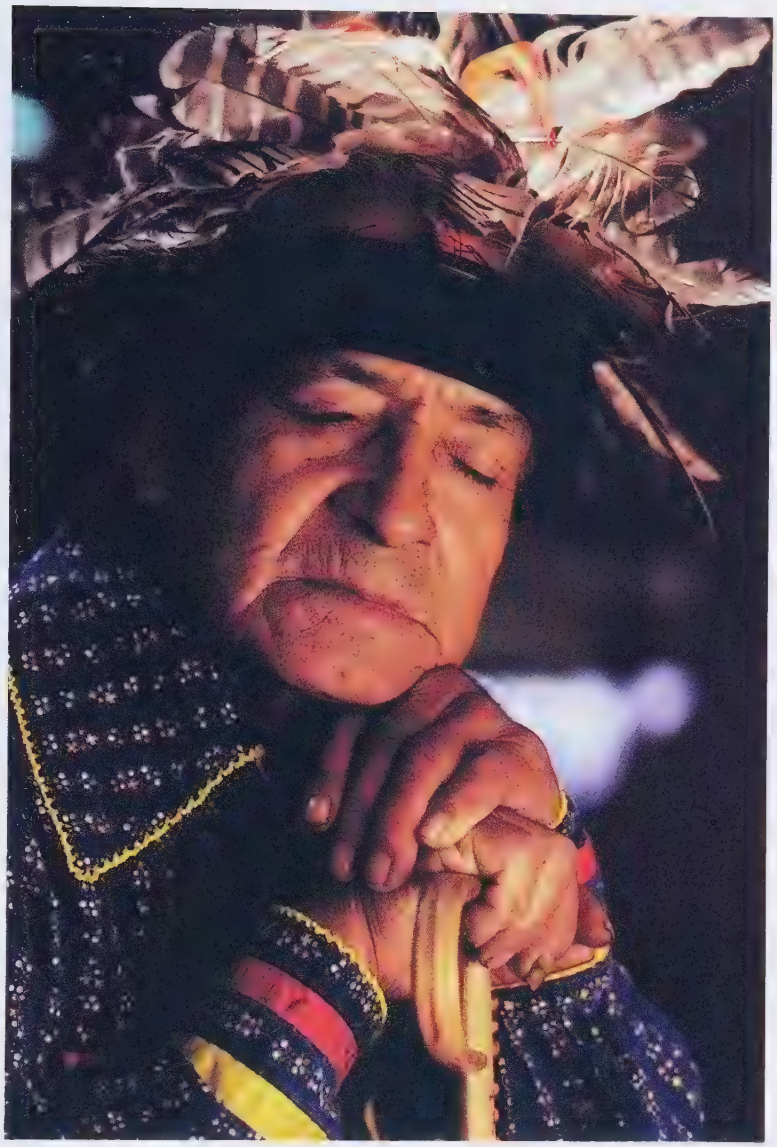


Chief Leon Shenandoah of the Six Nations Iroquois Confederacy leans solemnly on his ceremonial staff. STEVE WALL

Iroquois of the Akwesasne Mohawk longhouse dance to the rhythms of water drum and cow-horn rattle. STEVE WALL

New Day for Alaska's Pribilof Islanders. By Susan Hackley Johnson. Photos by Tim Thompson. Included: Tlingit Indians. 536-552, *Oct. 1982*

America's Federal Lands; The United States. Included: Indian reservations. *Sept. 1982*

Goal at the End of the Trail: Santa Fe. By William S. Ellis. Photos by Gordon W. Gahan and Otis Imboden. Included: Pueblo, San Ildefonso, Tesuque, Santa Clara. 323-345, *Mar. 1982*

Lost Empires, Living Tribes. 402 pages. *1982*

Buffalo Bill and the Enduring West. By Alice J. Hall. Photos by James L. Amos. Included: Cheyenne, Pawnees, Sioux; and reenactments of the Indian wars of the 1860s. 76-103, *July 1981*

Rediscovering America's Forgotten Crops. By Noel D. Vietmeyer. Photos by Burgess Blevins. Paintings by Paul M. Breeden. 702-712, *May 1981*

Baja's Murals of Mystery. By Harry Crosby. Photos by Charles O'Rear. 692-702, *Nov. 1980*

Man's Eighty Centuries in Veracruz. By S. Jeffrey K. Wilkerson. Photos by David Hiser. Paintings by Richard Schlecht. Included: Huastecs, Totonacs, and the Paleo-Indians of Veracruz. 203-231, *Aug. 1980*

Utah's Rock Art: Wilderness Louvre. A picture essay by Gary Smith, with Michael E. Long. Included: Anasazi Basket Maker, Anasazi Pueblo, Hopi, Utes. 97-117, *Jan. 1980*

Warm Springs Indians Carve Out a Future. By David S. Boyer. Contents: Confederated Tribes of Warm Springs Indians, including the Paiute, Wasco, and Warm Springs Tribes. 494-505, *Apr. 1979*

Washington's Yakima Valley. By Mark Miller. Photos by Sisse Brimberg. Included: Yakima Indian Nation and Reservation. 609-631, *Nov. 1978*

Mexican Folk Art. By Fernando Horcasitas. Photos by David Hiser. Included: Maya, Mayos, Nahuas, Otomí, Seris, Tarascans, and Zapotecs. 648-669, *May 1978*

Yukon Fever: Call of the North. By Robert Booth. Photos by George F. Mobley. Included: Loucheaux, and the Council for Yukon Indians. 548-578, *Apr. 1978*

Chief Joseph. By William Albert Allard. Included: Nez Perce. 409-434, *Mar. 1977*

The New Indians. 575, Nov. 1976; cover, *Feb. 1977*

Puget Sound, Sea Gate of the Pacific Northwest. By William Graves. Photos by David Alan Harvey. Included: Fishing rights of the Duwamish, Lummi, Nisqually, and Puyallup. 71-97, *Jan. 1977*

Probing the Mystery of the Medicine Wheels. By John A. Eddy. Photos by Thomas E. Hooper. Included: Arapahos, Cheyennes, Crows, Shoshones. 140-146, *Jan. 1977*

A First American Views His Land. By N. Scott Momaday. 13-19, *July 1976*

Alaska: Rising Northern Star. By Joseph Judge. Photos by Bruce Dale. Included: Ahtenas, Athapaskans, Haidas, Nulatos, and Tlingits. 730-767, *June 1975*

Nature's Gifts to Medicine. By Lonnelle Aikman. Paintings by Lloyd K. Townsend and Don Crowley. 420-440, *Sept. 1974*

The World of the American Indian. 399 pages. *1974*

Mexico, the City That Founded a Nation. By Louis de la Haba. Photos by Albert Moldvay. Included: Aztecs. 638-669, *May 1973*

Indians of North America; North America Before Columbus. *Dec. 1972*

Canada's Window on the Pacific: The British Columbia Coast. By Jules B. Billard. Photos by Ted Spiegel. Included: Haidas, Kwakiutl, Tsimshians. 338-375, *Mar. 1972*

Will Oil and Tundra Mix? Alaska's North Slope Hangs in the Balance. By William S. Ellis. Photos by Emory Kristof. Included: Athapascans of Arctic Village. 485-517, *Oct. 1971*

That Dammed Missouri River. By Gordon Young. Photos by David Hiser. Included: The Arikaras, Hidatsas, and Mandans of Fort Berthold Indian Reservation; also Sioux. 374-413, *Sept. 1971*

Oklahoma, the Adventurous One. By

Robert Paul Jordan. Photos by Robert W. Madden. Included: Cherokees, Cheyennes, Choctaws, Creek-Seminoles, Quapaws, Shawnee-Peoria. 149-189, *Aug. 1971*

Canada's Heartland, the Prairie Provinces. By W. E. Garrett. Included: Chipewyans, Crees. 443-489, *Oct. 1970*

New Mexico: The Golden Land. By Robert Laxalt. Photos by Adam Woolfitt. Included: Apaches, Navajos, Pueblos. 299-345, *Sept. 1970*

Mexico's Window on the Past (National Museum). By Bart McDowell. Photos by B. Anthony Stewart. Included: Aztecs, Maya, Mixtecs, Olmecs, Teotihuacanos, Toltecs, Zapotecs. 492-519, *Oct. 1968*

South to Mexico City. By W. E. Garrett. Included: Pre-Columbian civilizations; present-day Tarahumaras and Tarascans. 145-193, *Aug. 1968*

The Canadian North: Emerging Giant. By David S. Boyer. 1-43, *July 1968*

So Long, St. Louis, We're Heading West. By William C. Everhart. Included: Apaches, Cheyennes, Mandans, Plains Indians, Shoshonis, Sioux. 643-669, *Nov. 1965*

20th-century Indians Preserve Customs of the Cliff Dwellers. Photos by William Belknap, Jr. NGS research grant. 196-211, *Feb. 1964*

Arizona: Booming Youngster of the West. By Robert de Roos. Photos by Robert F. Sisson. Included: Apaches, Hopis, Navajos, Papagos. 299-343, *Mar. 1963*

Wyoming Muck Tells of Battle: Ice Age Man vs. Mammoth. By Cynthia Irwin, Henry Irwin, and George Agogino. NGS research grant. 828-837, *June 1962*

Mexico in Motion. By Bart McDowell. Photos by Kip Ross. Included: Aztecs, Chiapas, Maya, Tarascans, Zinacantecos. 490-537, *Oct. 1961*

Indians of the Americas. 431 pages. 1955; rev. ed. *1961*

Northwest Wonderland: Washington State. By Merle Severy. Photos by B. Anthony Stewart. Included: Hohs, Makahs, Yakimas. 445-493, *Apr. 1960*

Kachinas: Masked Dancers of the Southwest. By Paul Coze. 219-236, *Aug. 1957*

Life 8,000 Years Ago Uncovered in an Alabama Cave. By Carl F. Miller. Photos by Brooks Honeycutt. 542-558, *Oct. 1956*

Ice Age Man, the First American. By Thomas R. Henry. Paintings by Andre Durenceau. 781-806, *Dec. 1955*

Grand Canyon: Nature's Story of Creation. By Louis Schellbach. Photos by Justin Locke. Included: Havasupais, Hopis, Navajos. 589-629, *May 1955*

America's First Painters. By Dorothy Dunn. Contents: The art of the Apaches, Navajos, Pueblos, Sioux, Woodland and Plains tribes. 349-377, *Mar. 1955*

Amid the Mighty Walls of Zion. By Lewis F. Clark. Photos by Justin Locke and author. Contents: Basket Makers, Paiutes, Pueblos. 37-70, *Jan. 1954*

From Tucson to Tombstone. By Mason Sutherland. Included: Apaches, Hopi, Papagos; the San Carlos Apache, and the San Xavier Indian Reservations. 343-384, *Sept. 1953*

Following the Trail of Lewis and Clark. By Ralph Gray. Included: Arikara, Blackfeet, Flatheads, Mandans, Minnetarees, Otos, Shoshonis, Sioux, Teton Sioux. 707-750, *June 1953*

Seeking the Secret of the Giants. By Frank M. Setzler. Photos by Richard H. Stewart. Included: Maricopas, Pimas, Yumas. 390-404, *Sept. 1952*

Hays, Kansas, at the Nation's Heart. By Margaret M. Detwiler. Photos by John E. Fletcher. Included: Cheyennes, Comanches, Kaws, Pawnees, Pueblos. 461-490, *Apr. 1952*

Mexico's Booming Capital. By Mason Sutherland. Photos by Justin Locke. Included: Aztecs, Toltecs. 785-824, *Dec. 1951*

North Dakota Comes into Its Own. By Leo A. Borah. Photos by J. Baylor Roberts. Included: Arikaras, Hidatsas, Mandans. 283-322, *Sept. 1951*

Nomads of the Far North. By Matthew W. Stirling. 471-504. Contents: Algonquian and Athapascan linguistic stocks: Chipewyan, Cree, Kutchin, Micmac, Montagnais, Naskapi, Yellowknife. Included: Hearty Folk Defy Arctic Storms. Paintings by W. Langdon Kihn. 479-494, *Oct. 1949*

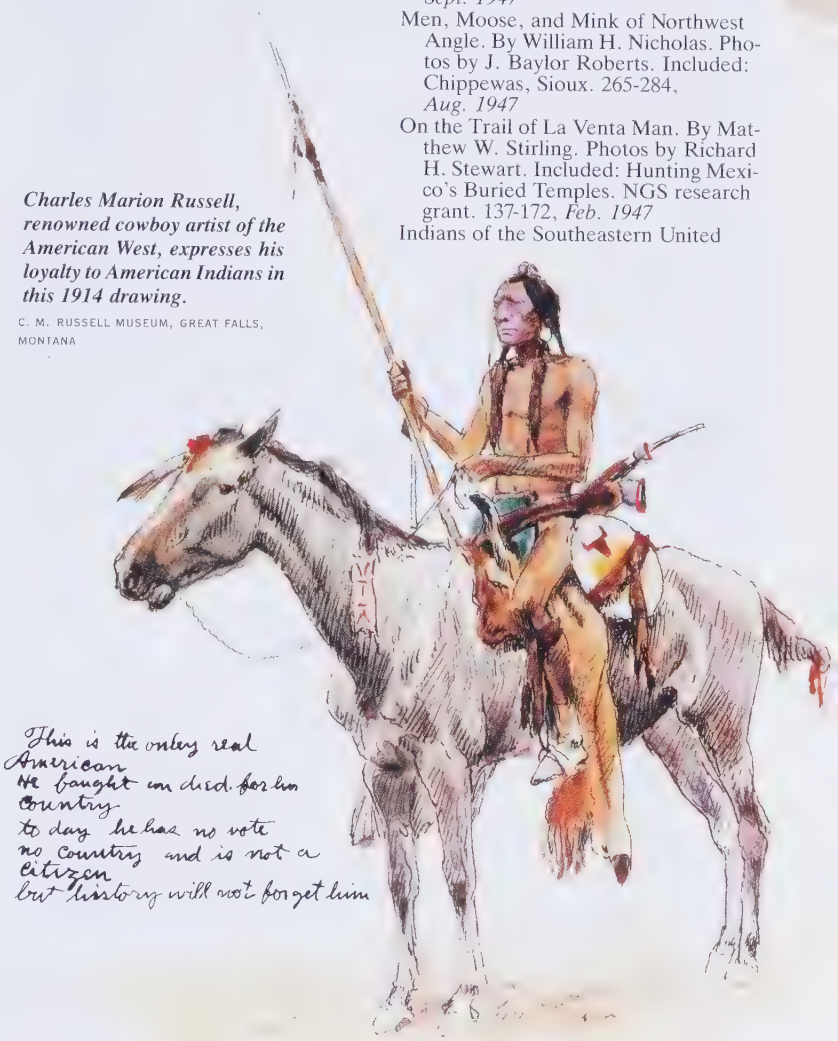
Indians of the Far West. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Contents: Cahuillas, Cayuse, Chemehuevis, Chumash, Costanoans, Dalles, Diegueños, Flatheads, Gabrieleños, Hidatsas, Hupas, Kamias, Klamaths, Klikitats, Maidus, Miwoks, Modocs, Mohaves, Monos, Nez Percé, Paiutes, Palus, Pomos, Shastas, Shoshonis, Teninos, Umatillas, Utes, Walla Wallas, Wanapums, Wappos, Wintuns, Yakimas, Yokuts, Yukis, Yumas, Yuroks. 175-200, *Feb. 1948*

Indian Life Before the Colonists Came. By Stuart E. Jones. Engravings by Theodore de Bry, 1590. 351-368, *Sept. 1947*

Men, Moose, and Mink of Northwest Angle. By William H. Nicholas. Photos by J. Baylor Roberts. Included: Chippewas, Sioux. 265-284, *Aug. 1947*

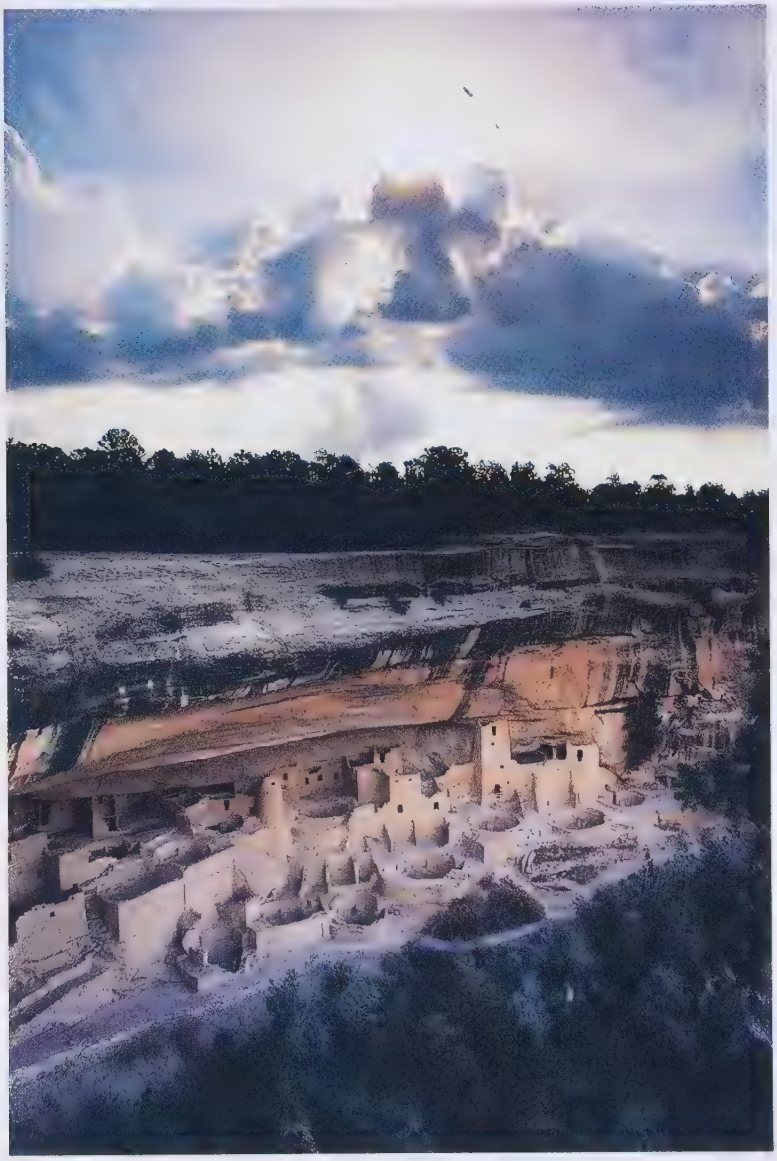
On the Trail of La Venta Man. By Matthew W. Stirling. Photos by Richard H. Stewart. Included: Hunting Mexico's Buried Temples. NGS research grant. 137-172, *Feb. 1947*

Indians of the Southeastern United


This is the only real
American
He fought in defence for his
Country
to day he has no vote
no Country and is not a
citizen
but history will not forget him

Charles Marion Russell, renowned cowboy artist of the American West, expresses his loyalty to American Indians in this 1914 drawing.

C. M. RUSSELL MUSEUM, GREAT FALLS, MONTANA



Ruins of thousand-year-old Mesa Verde in Colorado bear witness to the extraordinary ingenuity of its builders, the Anasazi. DEWITT JONES

States. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Included: Attacapans, Biloxis, Caddoans, Calusas, Catawbas, Cheraws, Cherokees, Chickasaws, Chitmachans, Choctaws, Creeks, Hitchitis, Muskhogeans, Natchez, Pamunkeys, Powhatan Confederacy, Seminoles, Shawnees, Taensas, Timucuans, Tunicans, Yuchis; Burial Mound and Temple Mound Periods. 53-74, *Jan. 1946*

Taming the Outlaw Missouri River. By Frederick Simpich. 569-598, *Nov. 1945*

Grass Makes Wyoming Fat. By Frederick Simpich. Included: Shoshonis. 153-188, *Aug. 1945*

Indians of Our North Pacific Coast. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Included: Bellacoolas, Haidas, Kwakiutl, Niskas, Nootkas, Pomos, Tlingits, Tsimshians. 25-52, *Jan. 1945*

Indians of Our Western Plains. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Included: Arapahos, Arikaras, Bannocks, Blackfeet, Caddos, Cheyennes, Chippewas, Comanches, Crows, Dakotas, Hidatsas, Iowas, Kansas, Kiowas, Mandans, Missouris, Osages, Pawnees, Quapaws, Shoshonis, Sioux, Utes, Wacos, Wichitas. 73-108, *July 1944*

Indian Tribes of Pueblo Land. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Included: Acomas, Apaches, Basket Makers, Cliff Dwellers, Cocopas, Comanches, Havasupais, Hohokam Culture, Hopis, Kiowas, Lagunas, Mojaves, Navajos, Paiutes, Papagos, Pimas, San Ildefonsos, Tewas, Utes, Yaquis, Yavapais, Yumas, Zunis. 549-596, *Nov. 1940*

New Mexico Melodrama. By Frederick Simpich. Included: Isletas, Navajos, San Ildefonsos, Santa Claras, Taos. 529-569, *May 1938*

America's First Settlers, the Indians. By Matthew W. Stirling. Paintings by W. Langdon Kihn. Included: Algonquians, Assiniboins, Cayugas, Chippewas, Hurons, Iroquois, Malecites, Menominees, Mohawks, Mohicans, Natchez, Oneidas, Onondagas, Passamaquoddys, Penobscots, Pequots, Sauk and Foxes, Senecas, Shawnees, Shoshonis, Tuscaroras, Wampanoags. 535-596, *Nov. 1937*

The Travels of George Washington: Dramatic Episodes in His Career as the First Geographer of the United States. By William Joseph Showalter. Included: Washington's dealings with the Half-King. 1-63, *Jan. 1932*

The Secret of the Southwest Solved by Talkative Tree Rings: Horizons of American History Are Carried Back to A. D. 700 and a Calendar for 1,200 Years Established by National Geographic Society Expeditions. By Andrew Ellicott Douglass. 737-770, *Dec. 1929*

Photographing the Marvels of the West in Colors. By Fred Payne Clatworthy. Included: Hopis and Sioux. 694-719, *June 1928*

Everyday Life in Pueblo Bonito: As Disclosed by the National Geographic Society's Archeologic Explorations in the Chaco Canyon National Monument, New Mexico. By Neil M. Judd. 227-262, *Sept. 1925*

Exploring in the Canyon of Death: Remains of a People Who Dwelt in Our Southwest at Least 4,000 Years Ago Are Revealed. By Earl H. Morris. 263-300, *Sept. 1925*

Adventuring Down the West Coast of Mexico. By Herbert Corey. Included: Aztecs and Yaquis. 449-503, *Nov. 1922*

Scenes from America's Southwest. Photos by Frederick I. Monsen and Charles Martin. Included: Hopis and Lagunas; *and* Canyon De Chelly, Canyon Del Muerto, Mesa Verde, Painted Desert, Pueblo Bonito, Tyuonyi, Walpi. 651-664, *June 1921*

The Origin of American State Names. By Frederick W. Lawrence. 105-143, *Aug. 1920*

Along Our Side of the Mexican Border. By Frederick Simpich. Included: Apaches, Coahuilas, Cocopahs, Pimas, Yumas. 61-80, *July 1920*

The Acorn, a Possibly Neglected Source of Food. By C. Hart Merriam. Included: Indians of California. 129-137, *Aug. 1918*

The Land of the Best. By Gilbert H. Grosvenor. Included: Acomas, Blackfeet, Hopis, Pueblos. 327-430, *Apr. 1916*

From the War-Path to the Plow. By Franklin K. Lane. Included: Apaches, Blackfeet, Cherokees, Crows, Osages. 73-87, *Jan. 1915*

The Isthmus of Tehuantepec: "The Bridge of the World's Commerce." By Helen Olsson-Seffer. Included: Agualulcos, Aztecs, Huaves, Mijes, Zapotecs, Zoques. 991-1002, *Dec. 1910*

The North American Indian. Included: Apaches, Havasupais, Maricopas, Mojaves, Navajos, Papagos, Pimas, Walapais, Yumas. 448-454, *June 1908*

North American Indians. Included: Acomas, Apaches, Crows, Hopis, Mohaves, Navajos, San Ildefonsos, Zunis. 469-484, *July 1907*

Game and Fur-Bearing Animals and Their Influence on the Indians of the Northwest. By Townsend W. Thorndike. 431, *Oct. 1904*

The Indian Village of Baum (Ohio). By H. C. Brown. 272-274, *July 1901*

The Five Civilized Tribes and the Survey of Indian Territory. By C. H. Fitch. Included: Cherokees, Chickasaws, Choctaws, Creeks, Seminoles. 481-491, *Dec. 1898*

Mesa Verde. By F. H. Newell. 431-434, *Oct. 1898*

Papagueria. By W J McGee. 345-371, *Aug. 1898*

The Northwest Passes to the Yukon. By Eliza Ruhamah Scidmore. Included: Chilkats, Chilkoots, Pellys, Tinnehs. 105-112, *Apr. 1898*

Geographic Work by the Bureau of American Ethnology. By W J McGee. 98-100, *Mar. 1898*

A Relic of the Lewis and Clarke Expedition. By Cyrus C. Babb. 100-101, *Mar. 1898*

The Sushitna River, Alaska. By W. A. Dickey. Included: Midnooskies, Kuskokwims, Tananas. 322-327, *Nov. 1897*

The Enchanted Mesa. By F. W. Hodge. 273-284, *Oct. 1897*

The Forests and Deserts of Arizona. By Bernhard E. Fernow. Included: Hopis. 203-226, *July-Aug. 1897*

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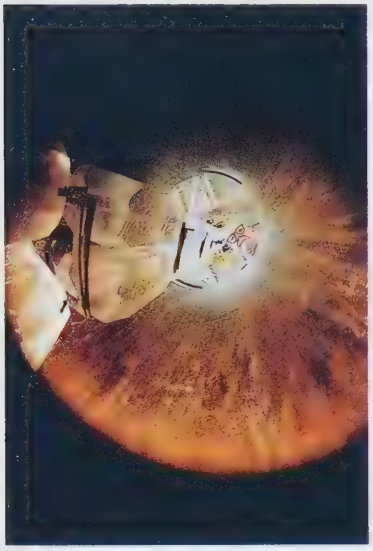

Peering into a device like a pressure cooker, a technician lifts out crystals of synthetic quartz. SAM ABELL

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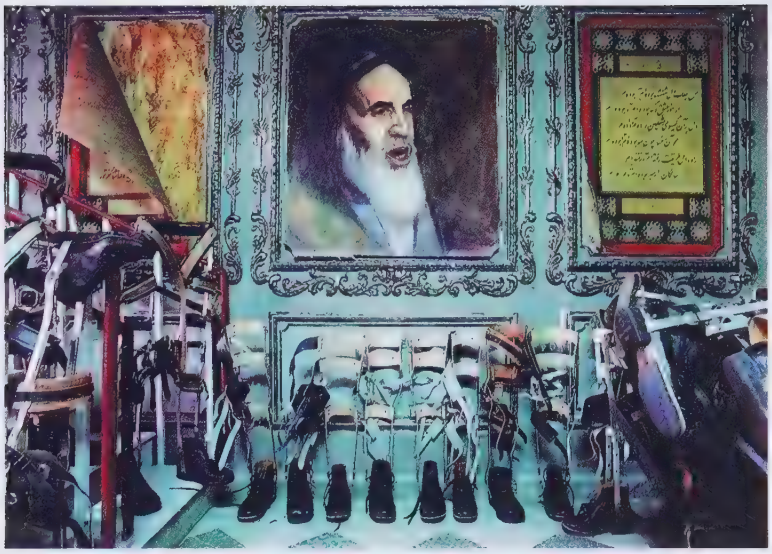

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The rise of Japan from an island world of provincial clans to a world economic power is traced on a June 1984 supplement map.

A Japanese girl's picture is taken on Seven-Five-Three Day, a holdover from days of high child mortality when those ages were considered milestones. DAVID ALAN HARVEY

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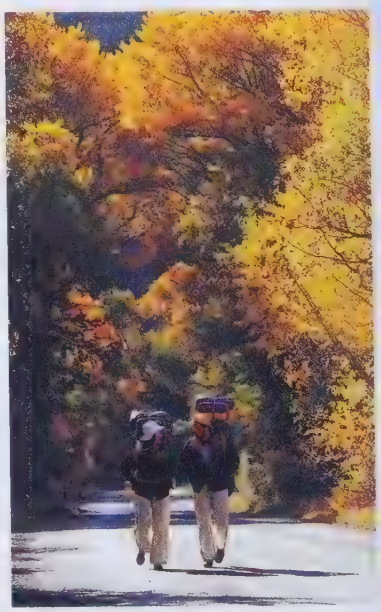

Peter and Barbara Jenkins pass through New Mexico in 1977 on Part II of "Walk Across America." JAY DICKMAN

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They're Redesigning the Airplane. By Michael E. Long. Photos by James A. Sugar. 76-103, *Jan. 1981*
Of Planes and Men. By Kenneth F. Weaver. Photos by Emory Kristof and Albert Moldvay. 298-349, *Sept. 1965*
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Left for dead by Nazi executioners, Jonasz Stern fled Poland in 1943, later returning to become an artist in Kraków. TOMASZ TOMASZEWSKI

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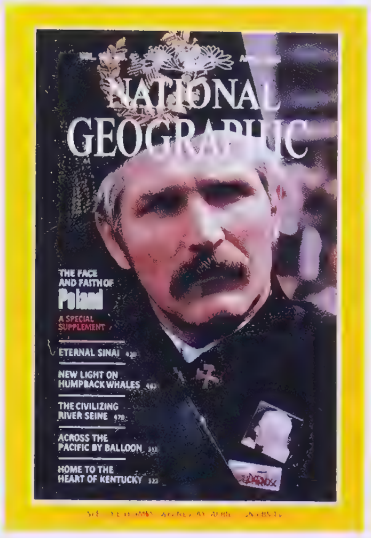
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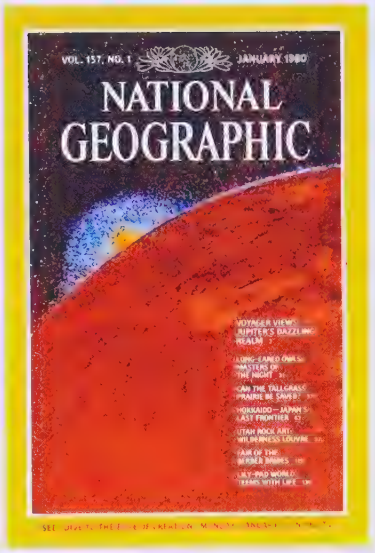

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July, 1963

NATIONAL GEOGRAPHIC

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Just a Hundred Years Ago

By Carl Sandburg

TWO LITTLE AMERICAN BURGS named for long-forgotten settlers, Gettys and Vick.... Two towns with no special claim to be noted or long remembered, till events wrote them red for all time as the turning point in the Civil War, just a hundred years ago this July....

Two towns, one turning point, for on the same day in 1863—the Fourth of July—Grant took Vicksburg on the Mississippi and Lee ordered a retreat to the Potomac after failing to win the terrible three-day Battle of Gettysburg. A heavy rain fell as the long gray columns turned south that night from their zenith.

Lee's Union opponent, General Meade, issued a congratulatory order

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A silent cannon stands in the Gettysburg battlefield, commemorated in Carl Sandburg's 1963 magazine essay, "Just a Hundred Years Ago."

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KALAHARI BUSHMEN
KANGAROOS
KARAKORAM RANGE
KASHMIR
KATMAI NATIONAL PARK
KAYAKING
KELP FORESTS
KENNEDY SPACE CENTER
KIBBUTZIM
KILAUEA VOLCANO
KILLER WHALES
KING CRABS
KINGS CANYON NATIONAL PARK
KIWIFRUIT
KOALAS
KOKO
KOMODO DRAGONS
KREMLIN
KUBLAI KHAN
LABRADOR
LADYBUGS
LAND YACHTS
LANDFILLS
LANDSAT
LAOTIAN REFUGEES
LAPLAND
LASCAUX CAVE
LASERS
LEAKEY FAMILY
LEMURS
LEONARDO DA VINCI
LEWIS AND CLARK EXPEDITION
LIGHT TECHNOLOGY
LIONS
LITERATURE
LOBSTERS
LONG-NECKED WOMEN
LUNAR RESEARCH

A lioness and her cub lie in wait in the Serengeti, Africa's premier wildlife sanctuary.

MITSUAKI IWAGO

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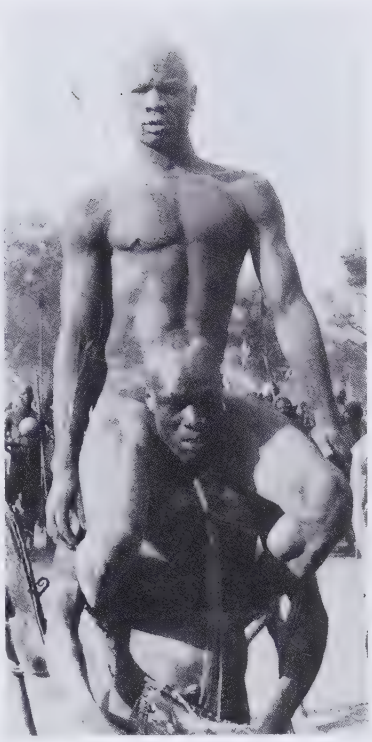

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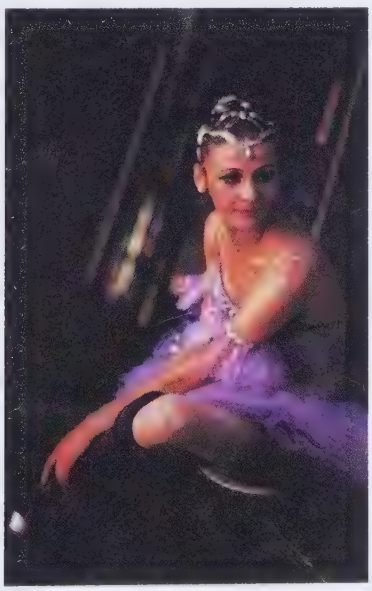

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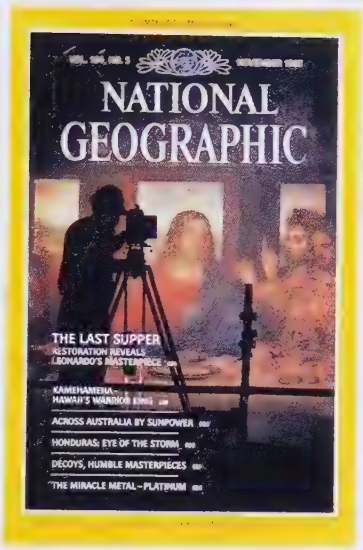

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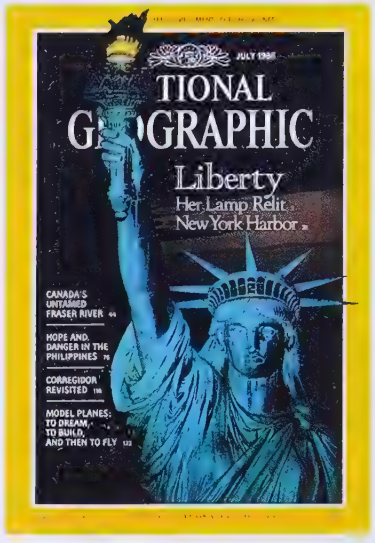

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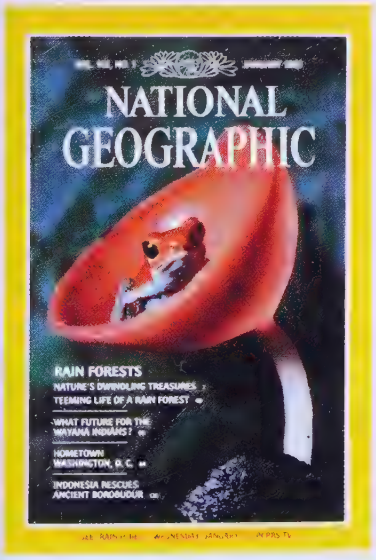

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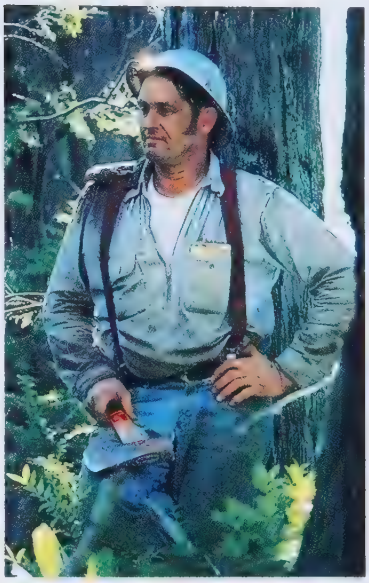

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Etta Spencer and great-grandson Chad O'Neal visit in Ocracoke on North Carolina's Outer Banks.

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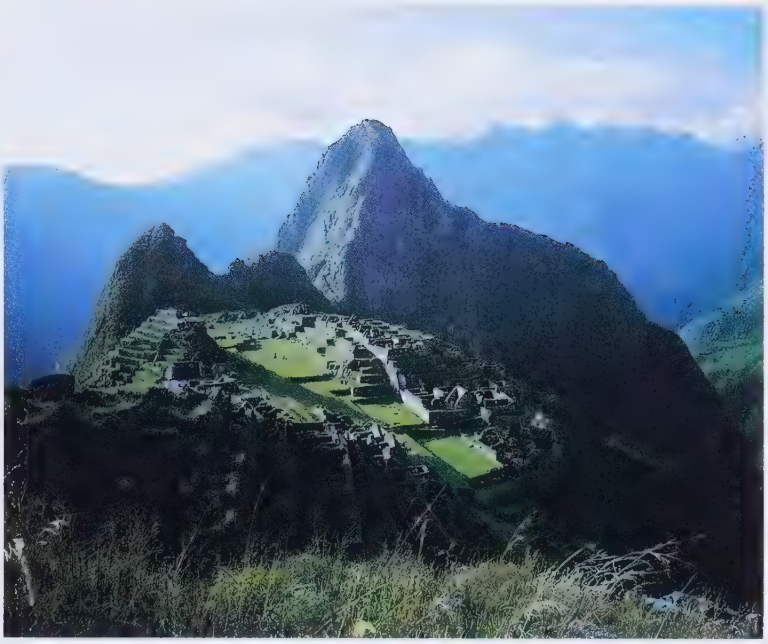

Peru's Machu Picchu was found in 1911 by Hiram Bingham, who received funding from National Geographic to explore the ancient Inca city. BATES LITTLEHALES, NGS

Alaskan sunlight gilds 20,320-foot Mount McKinley, North America's premier mountain. BRADFORD WASHBURN

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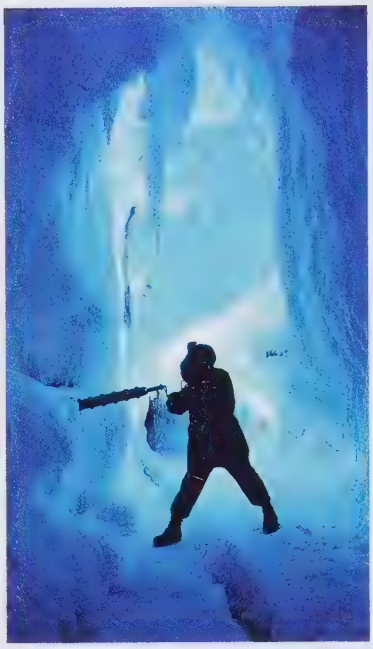

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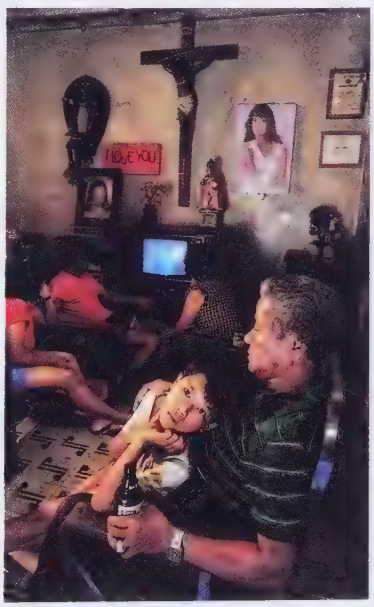

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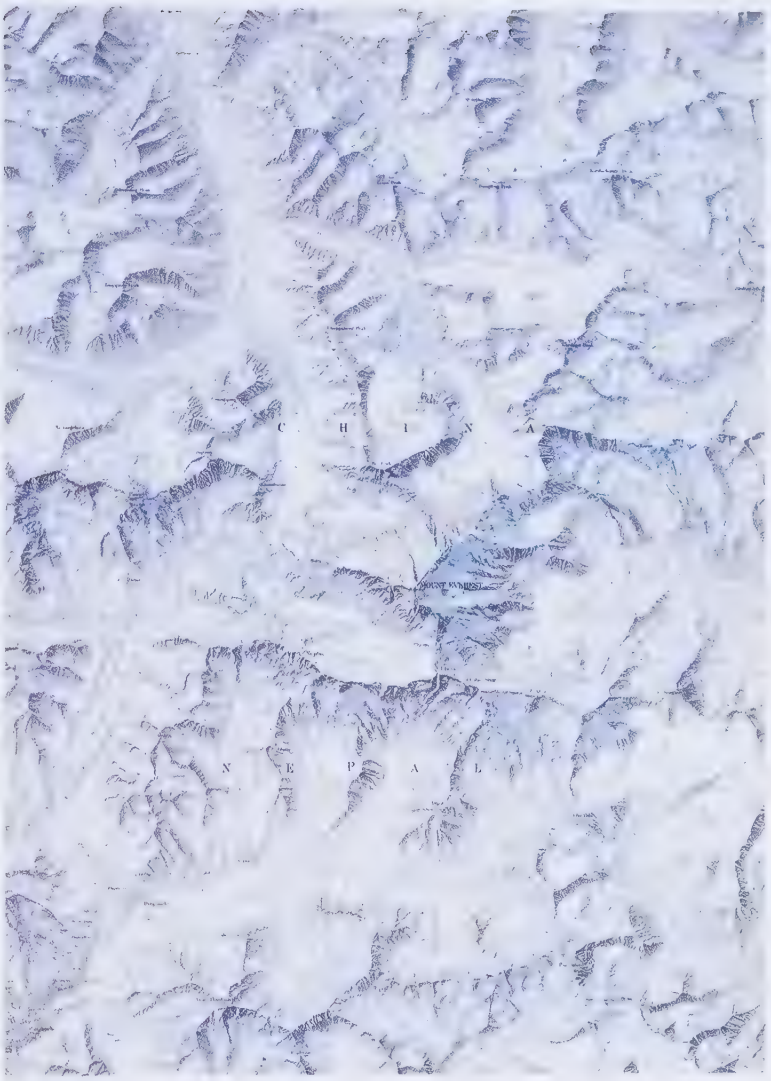

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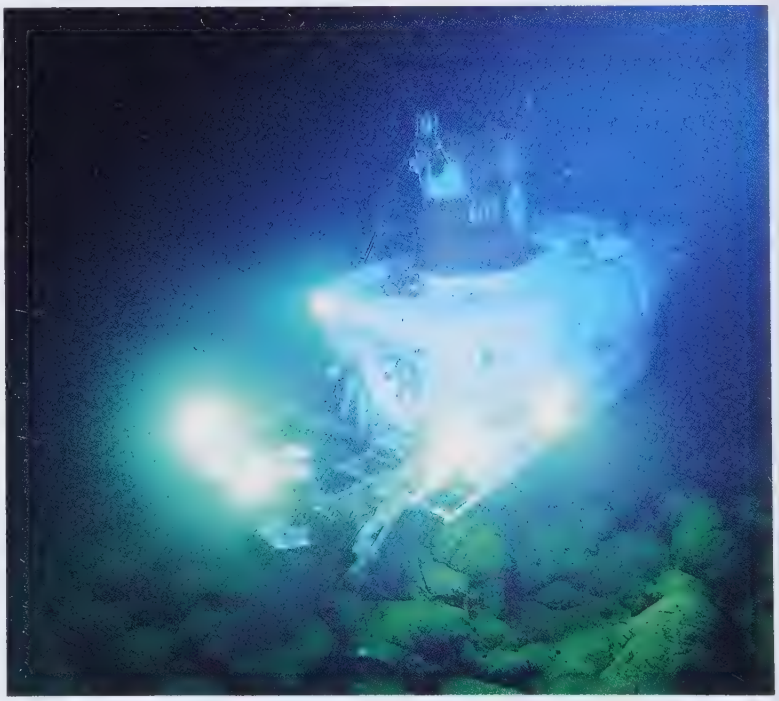

In the tiny submersible* Alvin, *scientists explore the Mid-Ocean Ridge, finding startling marine life and mineral sources. EMORY KRISTOF AND ALVIN M. CHANDLER, BOTH NGS

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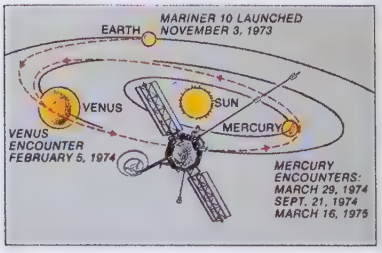
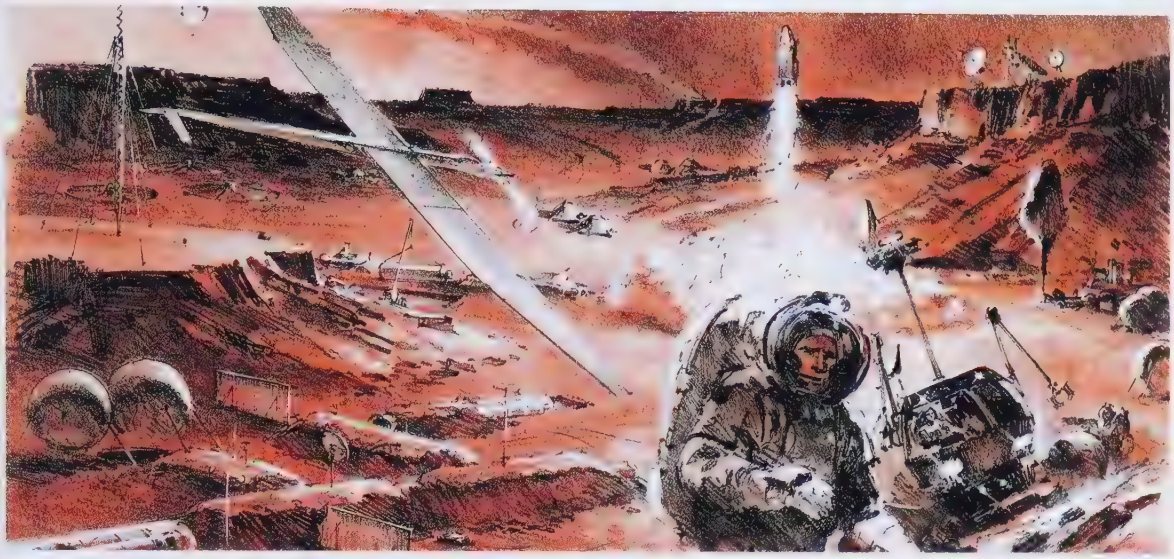


A 1974 mosaic of images made by Mariner 10 shows the meteorite-pocked surface of the planet Mercury. Diagram traces the spacecraft's path to encounter. NASA



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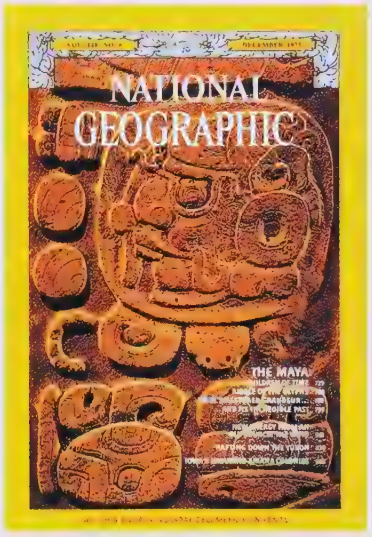

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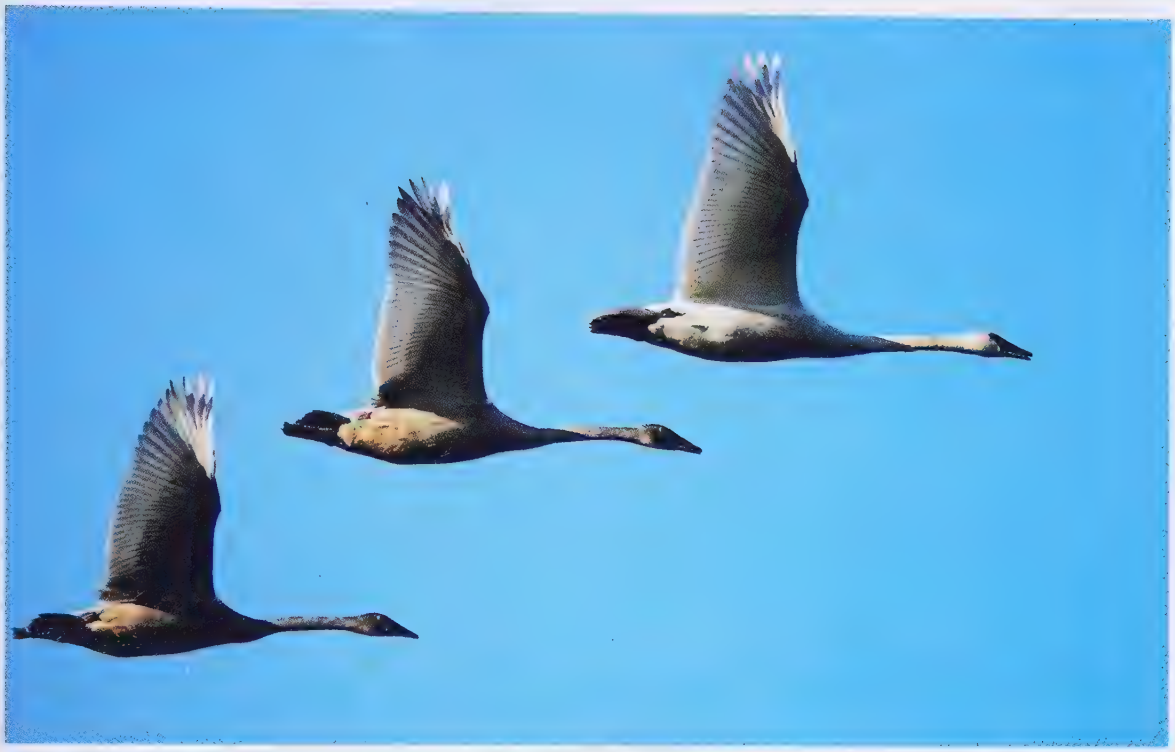

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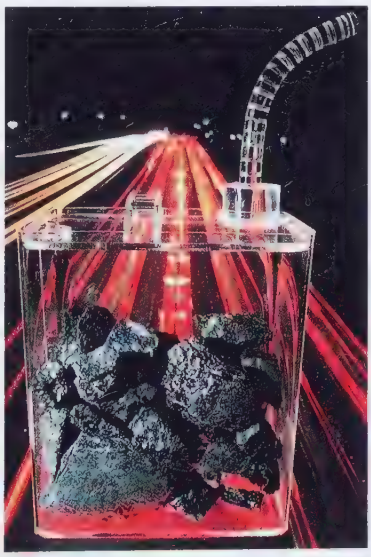

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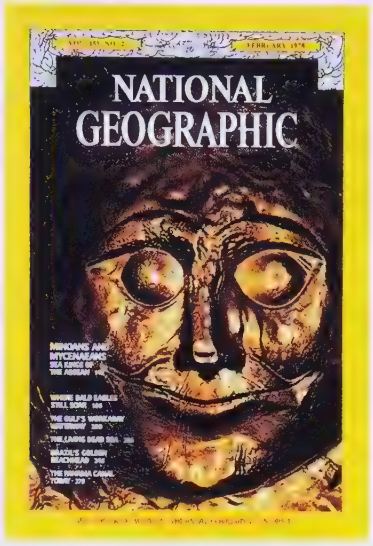

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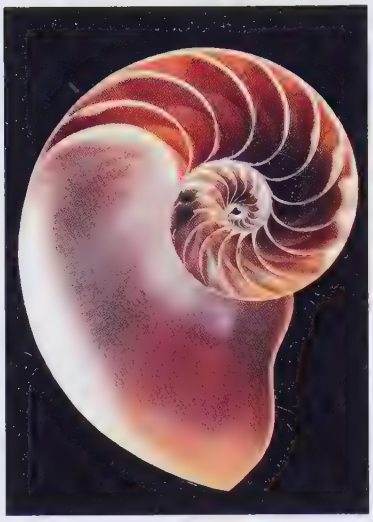

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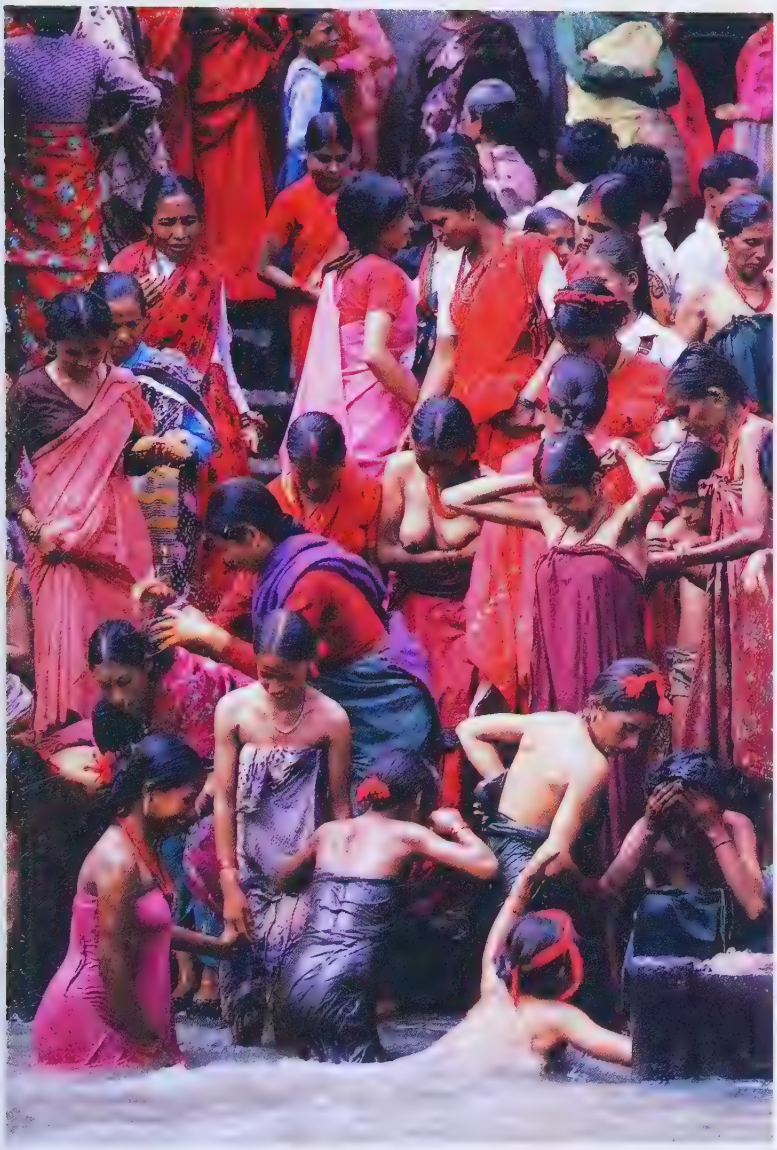

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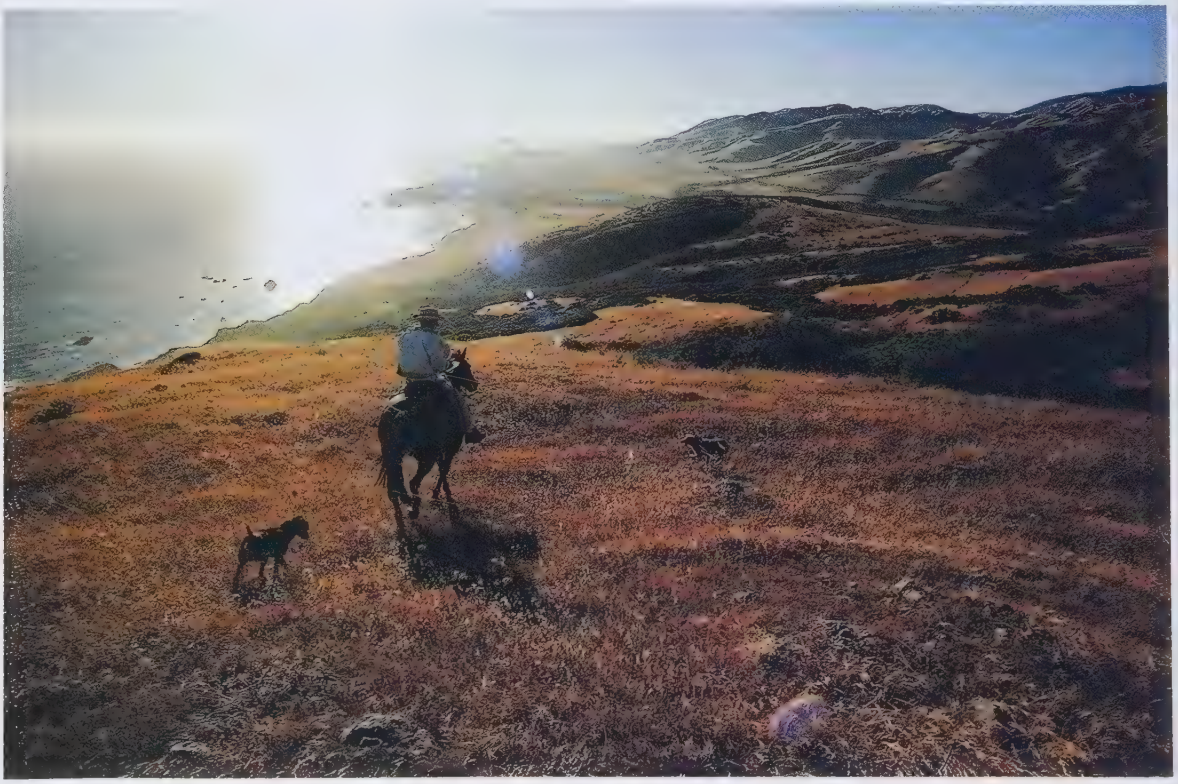

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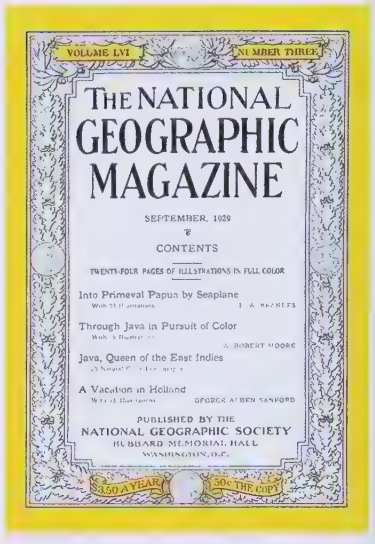

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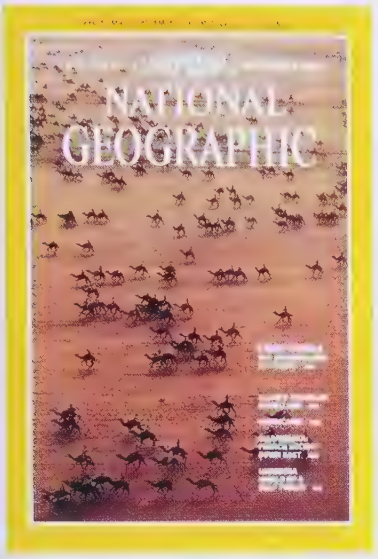

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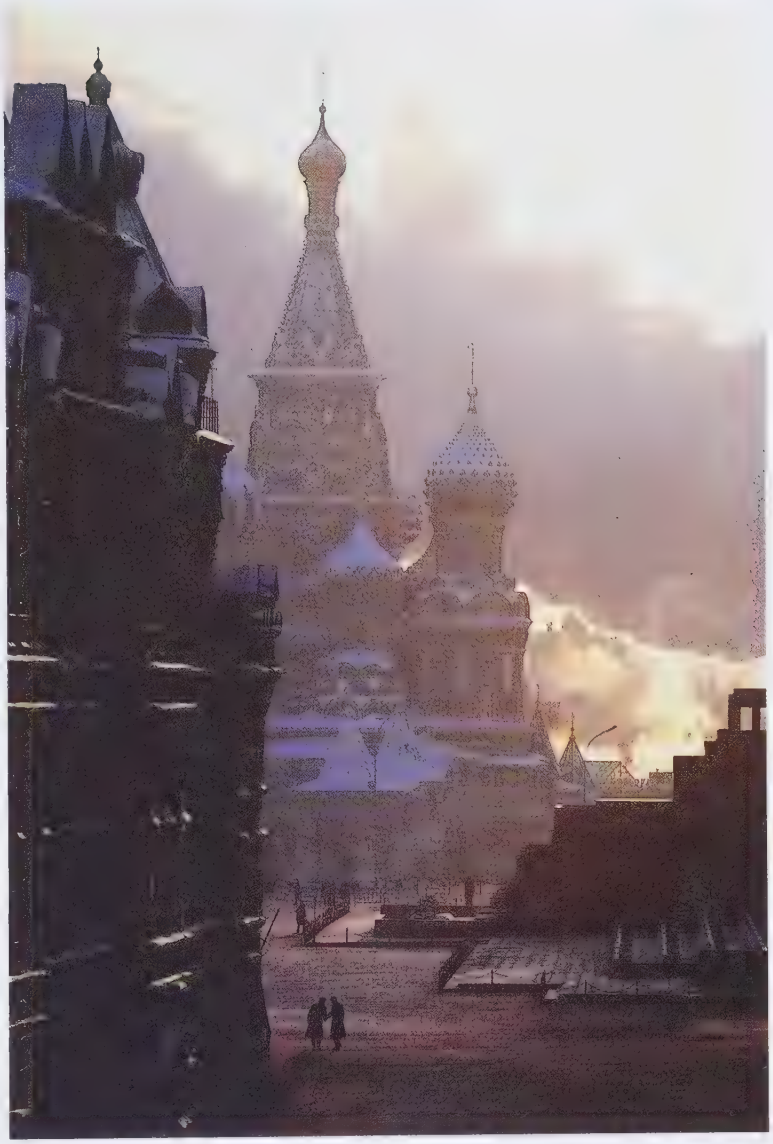

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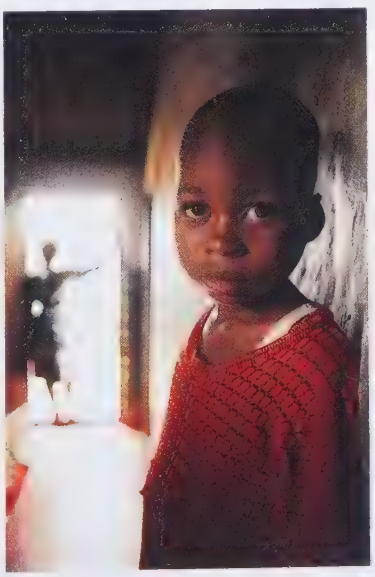

Under South Africa's policy of apartheid, this Zulu child in the Natal region lives in a segregated township. DICK DURRANCE I

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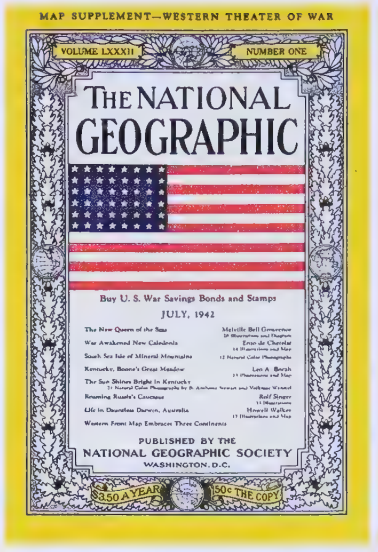

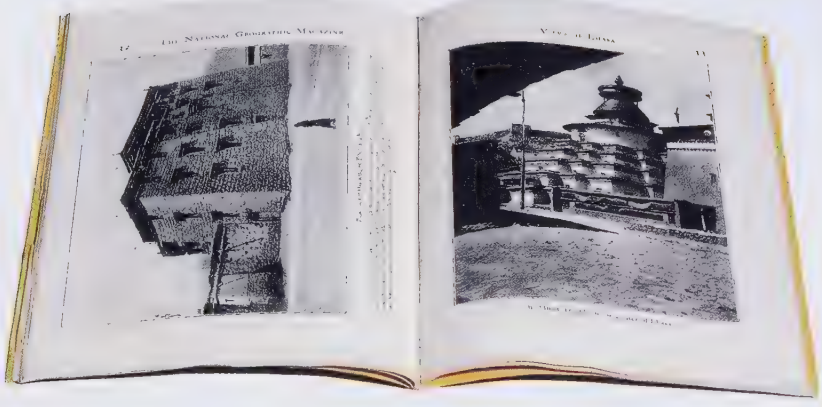

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Photographers amass national awards. 850, *Dec. 1981*

Donated by the Imperial Russian Geographical Society of St. Petersburg, views of Lhasa, Tibet, were published in the GEOGRAPHIC's January 1905 issue (above).

NATIONAL GEOGRAPHIC's longest foldout was published in June 1911. Measuring eight feet in length, it showed a panorama of the Canadian Rockies.

CHARLES D. WALCOTT

They cover the world.... Awards to staff writers. Nomination Page. *July 1977*
Thomas J. Abercrombie, recipient of National Press Photographers Association awards. Editorial by Gilbert M. Grosvenor. 291, *Mar. 1977*
U. S. Camera Achievement Award medal (1951). 481, *Oct. 1966*
University of Missouri's Honor Award for Distinguished Service in Journalism (1954). 539, *Oct. 1963*
Photographers amass national awards. 898, 901, *Dec. 1962*
Photographers amass national awards. 878, 880-881, *Dec. 1961*
National Geographic Photographers Win Top Magazine Awards. 830-831, *June 1959*
Freedoms Foundation awards received by editor and two staff writers. 190, *Feb. 1954*
La Belle Award received by Franklin L. Fisher on behalf of the Society for outstanding contributions to the development of color photography in magazine illustration. 692, *Nov. 1953*

Braille Edition and Sound Recordings

Editorial. By Wilbur E. Garrett. 145, *Aug. 1986*

Centennial

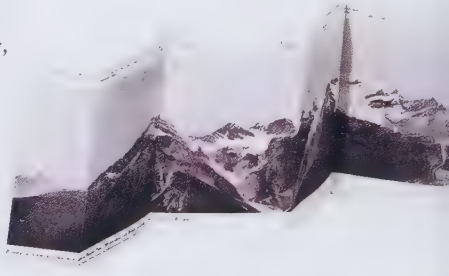
Editorial. By Wilbur E. Garrett. 1-2, *Jan. 1988*

Cover Photographs: *Commentary in NGM*

Hologram of crystal globe. Geographica; On Assignment. *Dec. 1988*
Within the Yellow Border. Editorial by Wilbur E. Garrett. Included: Foldout displaying early covers and all cover illustrations since the first in July 1942. 270-286, *Sept. 1988*
Editorial. By Wilbur E. Garrett. Oregon Trail pioneers. 147, Feb. 1987; cover, *Aug. 1986*
Hologram of skull. 559, *Nov. 1985*
Hologram of eagle. 281, 372, *Mar. 1984*
Photographs appeared as a regular feature on the yellow-bordered cover during Melville Bell Grosvenor's tenure as Editor. 270, *Aug. 1982*
First color cover (American flag). *July 1942*
See also Covers, NGM, for brief descriptions

Editor

Gilbert Hovey Grosvenor (1899-1954); John Oliver La Gorce (1954-1957); Melville Bell Grosvenor (1957-1967); Frederick G. Vosburgh (1967-1970); Gilbert M. Grosvenor (1970-1980); Wilbur E. Garrett (1980-)



Finisher Arthur Graf uses a natural gas flame to create a smooth electrotype plate for printing a NATIONAL GEOGRAPHIC cover in 1951. J. BAYLOR ROBERTS, NGS

Editor, Senior Associate
Joseph Judge (1985-)

Editor-at-Large
Charles McCarry (1988-)

Editorial Policy. 486, May 1909; 273-274, Mar. 1912; 253, Feb. 1913; 319, Mar. 1915; 123, 135, 145, 148, 149, Jan. 1936; 587, Nov. 1974; 1, Jan. 1978; 293, Mar. 1979; 427, Oct. 1980; 567, Nov. 1980; 279, Sept. 1981; 1, Jan. 1982; 553, Nov. 1982; 1, Jan. 1984; 561, Nov. 1984; 1, *Jan. 1986*

Editorials
Introduction as a regular feature. 587, *Nov. 1974*

Editors, Associate
John Oliver La Gorce (1914-1954); Melville Bell Grosvenor (1954-1957); Frederick G. Vosburgh (1957-1967); Gilbert M. Grosvenor (1967-1970); Franc Shor (1967-1974); John Scofield (1970-1978); Joseph Judge (1978-1985); Thomas R. Smith (1985-)

Geographica
Introduction of feature. *Oct. 1988*

History
Three Men Who Made the Magazine. By Charles McCarry. 287-316, *Sept. 1988*
"The Greatest Job in the World?" By Joseph Judge. Contents: Recollections of writers and photographers by the Senior Associate Editor. 317-321, *Sept. 1988*
Melville Bell Grosvenor, A Decade of Innovation, a Lifetime of Service. By Bart McDowell. 270-278, *Aug. 1982*
National Geographic Society Trustees Elect Key Executives. 576-590, *Oct. 1967*
To Gilbert Grosvenor: A Monthly Monument 25 Miles High. By Frederick G. Vosburgh and the staff of the National Geographic Society. 445-487, *Oct. 1966*
First Lady of the National Geographic (Elsie May Bell Grosvenor). By Gilbert Hovey Grosvenor. 101-121, *July 1965*
The Romance of the Geographic: National Geographic Magazine Observes Its Diamond Anniversary. By Gilbert Hovey Grosvenor. 516-585, *Oct. 1963*
75 Years Exploring Earth, Sea, and Sky: National Geographic Society Observes Its Diamond Anniversary. By Melvin M. Payne. 1-43, *Jan. 1963*
The National Geographic Society and Its Magazine. By Gilbert Grosvenor. Reprint of the Foreword to the Cumulative Index to the National Geographic Magazine, 1899 to 1946. 116 pages. 1936; rev. ed. *1948*
The National Geographic Society and Its Magazine. By Gilbert Grosvenor. 123-164, *Jan. 1936*
History of the Magazine (Speech by Alexander Graham Bell). 273-274, *Mar. 1912*
Early years of the Magazine. 221-222, *June 1899*

Indexes: *Statements about*
Key to '83. 840, Dec. 1983; Key to '84. 848, Dec. 1984; Key to '85. 842, Dec. 1985; Key to '86. 834, Dec. 1986; Key to '87. 832, Dec. 1987; Key to '88. 946, *Dec. 1988*
Editorial on cumulative and six-month indexes. By Wilbur E. Garrett. 423, *Apr. 1984*

Issues, Early
First issue, October 1888
Reprinting Brings Earliest Geographics to Life. By Melvin M. Payne. 688-689, *Nov. 1964*

Maps. *See* Map Supplements

Members Forum
Introduction of feature. 279, *Sept. 1981*

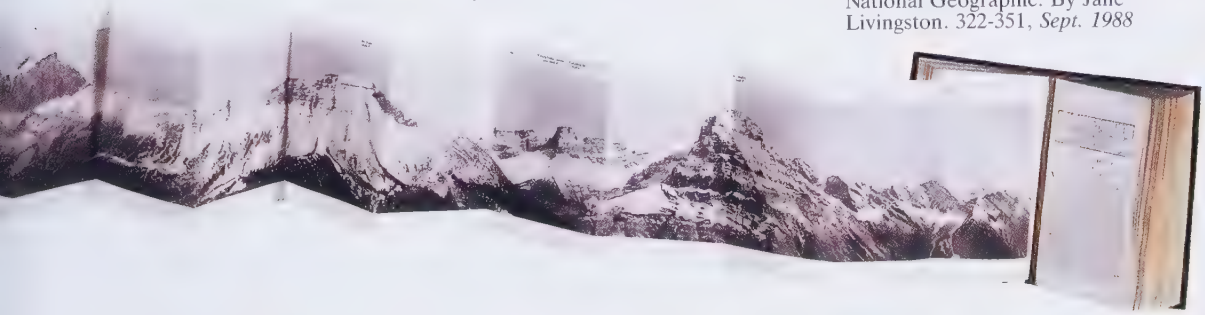
On Assignment
Introduction of feature. 709, *Dec. 1981*

Paintings. *See* Painting Supplements

Photographers: *Comments about*
Number of color photographs made by NGM photographers (7,500,000). 149, *July 1975*
Editorials. 295, Mar. 1975; 439, Apr. 1975; 1, July 1981; 553, *Nov. 1982*
See also NGM: Awards Received; Nomination Page; On Assignment; *and* names of individual photographers

Photographic Exhibit
Editorial. By Wilbur E. Garrett. Contents: Odyssey: The Art of Photography at National Geographic, a touring centennial exhibit. 1, *July 1988*

Photographs: *Commentary on*
Odyssey: The Art of Photography at National Geographic. By Jane Livingston. 322-351, *Sept. 1988*



Photographs appeared as a regular feature on the yellow-bordered cover during Melville Bell Grosvenor's tenure as Editor. 270, *Aug. 1982*
A never-before-published Autochrome of Mark Twain made in 1908. 299, 301, *Sept. 1975*
First extensive use of photographs: Gilbert H. Grosvenor's policy. 421, Mar. 1957; 574, *Oct. 1963*
Award-winning photos. 830-831, June 1959; 898, 901, *Dec. 1962*
First use of High Speed Ektachrome film. 864, *Dec. 1959*
Two NGM photographs were used in designing the Gadsden Purchase postage stamp. 135, *July 1954*
First aerial photographs of the North Pole. 478-479, *Oct. 1953*
First color cover of the magazine (the American flag). *July 1942*
First natural-color photograph taken in the stratosphere *(Explorer II)*. By Albert W. Stevens. 340, *Mar. 1937*
First natural-color photograph of an eclipse, showing the corona. By Irvine C. Gardiner. 178, *Feb. 1937*
First photograph ever made showing the division between the troposphere and stratosphere and also the actual curvature of the earth. By Albert W. Stevens (from *Explorer II,* November 11, 1935). Supplement. *May 1936*
List of pioneering achievements in photography. 128, *Jan. 1936*
First photograph ever made showing laterally the curvature of the earth. By Albert W. Stevens. 634, *May 1931*
First aerial color photographs published. 345-352, *Sept. 1930*
First successful natural-color photographs of life beneath the sea. 57-60, *Jan. 1927*
First series of natural-color photographs of the Arctic. 301-316, *Mar. 1926*
Autochromes: First natural-color series, "The Land of the Best." 379-405, *Apr. 1916*
First published Autochrome. 49, *July 1914*
Doe and twin fawns. Photo by George Shiras, 3d. Supplement. *July 1913*
First color series, hand-colored, "Scenes in Korea and China." 903-926, *Nov. 1910*
First photographic series: Eleven pages of pictures of the Forbidden City, Lhasa, Tibet. 28-38, *Jan. 1905*
First published photograph. *July 1890*
First appearance of hand-tinted illustrations. 315-335, *Oct. 1889*
See also NGM: Awards Received; *and* Photography

President's Page
Introduction of feature. *Jan. 1984*

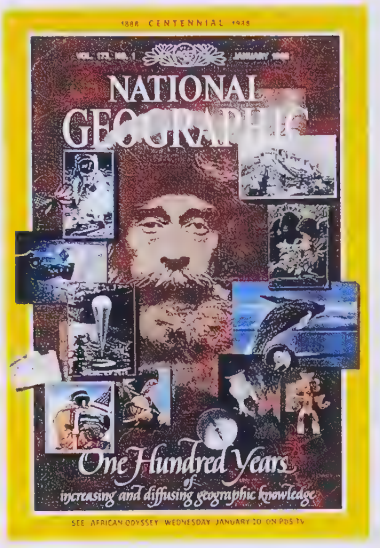
Printing and Printers
Krueger Ringier (formerly W. F. Hall), Corinth, Mississippi, printers of the Magazine (1977-) 224, 226, Aug. 1976; 583, Nov. 1977; On Assignment, *Mar. 1988*
New presses printed an all-color magazine during Melville Bell Grosvenor's tenure. 270, *Aug. 1982*
R. R. Donnelley & Sons, Chicago, printers of the Magazine (1960-1977). 874-886, Dec. 1960; 878, 879, Dec. 1961; 582, Apr. 1962; 897, Dec. 1962; 772, June 1967; 529, *Apr. 1968*
Linofilm typesetting technique and high-speed web presses introduced. 836, Dec. 1959; 584, 588, *Oct. 1967*
Judd & Detweiler, Washington, D. C., printers of the Magazine (1891-1960). 465, Apr. 1914; 559, Oct. 1951; 561, *Oct. 1963*
McClure, Phillips & Company, New York. 559, 561, *Oct. 1963*
Beck Engraving Company, Philadelphia. 31, *July 1952*
Printing the Magazine. 474, 484, *Apr. 1942*

Recordings
Recorded edition of NGM loaned by Library of Congress to the visually impaired. 681, *Nov. 1975*
See also Records and Sound Sheets

Reprints: *Statements about*
Special Report on Energy. 849, *Dec. 1981*
The National Geographic Society and Its Magazine. By Gilbert H. Grosvenor. 582A, Oct. 1957; 880, *Dec. 1964*
Reprinting Brings Earliest Geographics to Life. By Melvin M. Payne. 688-689, *Nov. 1964*
The Last Full Measure (Tribute to President Kennedy). By Melville Bell Grosvenor. 355, *Mar. 1964*
The National Geographic Society and Its Magazine. By Gilbert Grosvenor. Reprint of the Foreword to the Cumulative Index to the National Geographic Magazine, 1899 to 1946. 116 pages. 1936; rev. ed. *1948*

Supplements. *See* Map Supplements; Painting Supplements; Photo Supplements; Records and Sound Sheets

Writers: *Comments about*
Editorials. By Gilbert M. Grosvenor. 295, Mar. 1975; 439, Apr. 1975; By Wilbur E. Garrett. 1, July 1981; 709, Dec. 1981; 553, *Nov. 1982*



Historic photographs of exploration on the January 1988 cover kicked off the Society's centennial celebration.

NATIONAL Geographic Photographer's Field Guide. By Albert Moldvay. 120 pages. *1981*

NATIONAL Geographic Picture Atlas of Our Fifty States. Included: Pertinent information about the geography, climate, and population of each state. Juvenile. 304 pages. *1978*

NATIONAL Geographic Picture Atlas of Our Universe. By Roy A. Gallant. Juvenile. 284 pages. 1980; rev. ed. *1986*

NATIONAL Geographic Picture Atlas of Our World. Juvenile. 312 pages. *1979*

NATIONAL GEOGRAPHIC RESEARCH:
New journal announced. President's Page. By Gilbert M. Grosvenor. Aug. 1984; Nov. 1984; *May 1985*

NATIONAL GEOGRAPHIC SOCIETY (NGS):

Atlases. *See* Atlases, NGS

Awards Presented and Noted in NGM
The National Geographic Society Centennial Award. President's Page. By Gilbert M. Grosvenor. Recipients: Robert D. Ballard, George F. Bass, Jacques-Yves Cousteau, Frank C. Craighead, John J. Craighead, Harold E. Edgerton, Kenan T. Erim, John H. Glenn, Jr., Jane Goodall, Sir Edmund P. Hillary, Mary Leakey, Richard Leakey, Thayer Soule, and Bradford and Barbara Washburn. *Dec. 1988*
General Thomas D. White Space Trophy (USAF award) for 1973 presented to astronaut Henry W. Hartsfield, Jr., capsule communicator for Skylab I, at NGS headquarters. 452, *Oct. 1974*
Jane M. Smith Award recipients: Sir Bruce Ingram. 474, Apr. 1961; Lyndon B. Johnson. 906, Dec. 1962; 113, Jan. 1966; 468, *Oct. 1966*
Tenzing Norkey presented with cash award and replica of the Hubbard Medal given to the British Mount Everest Expedition. 846, *June 1955*
See also Grosvenor Medal; Hubbard Medal; La Gorce Medal; Special Gold Medal

Awards Received and Noted in NGM
Citation of Honor: Air Force Association's bronze plaque presented to the Society for providing cartographic aid to airmen during World War II. 846, *Dec. 1949*
See also NGM: Awards Received; NGS: Book Service; NGS: Television and Educational Films

Bequests
Pickering Bequest. President's Page. By Gilbert M. Grosvenor. *Oct. 1985*
Fund bequeathed by Mary C. Burr. 626, *May 1934*
Bequests by members of the National Geographic Society. 474, *Apr. 1926*
A. W. Cutler, photographic artist, leaves his entire collection of negatives to the Society. 34, *July 1922*
James C. Horgan bequest. 338, *Apr. 1920*

At the Cosmos Club on January 13, 1888, 33 uncommon men founded the National Geographic Society. PAINTING BY STANLEY MELTZOFF

Jane M. Smith bequest for life memberships. 104, Jan. 1912; 342-343, *Apr. 1920*

Board of Managers
Resolution authorizing purchase of Big Trees. 5, *Jan. 1917*
Resolution withdrawing subscription to South Polar Expedition of Peary Arctic Club. 365, *Apr. 1910*
Claims of Peary and Cook referred to Committee on Research. 921-922, *Nov. 1909*
Research fund established. 486, *May 1909*
Resolution subscribing to Peary Expedition of 1907-1908. 281, *Apr. 1907*
Resolution concerning Wellman Polar Expedition. 205, *Apr. 1906*
Standing rules of the Board of Managers. 308-310, *Apr. 1891*
See also Board of Trustees

Board of Trustees
1988: The Trustees Who Have Carried On the Tradition. By Melvin M. Payne. 38-43, *Jan. 1988*
Portraits. 65A-65B, July 1954; 834-835, Dec. 1959; 113, Jan. 1960; 883, Dec. 1960; 553, Oct. 1965; 484-485, Oct. 1966; 588-589, Oct. 1967; 226-227, Aug. 1976; 41-42, 1913 portrait 43, *Jan. 1988*
Chairman of the Board. Gilbert Hovey Grosvenor (1954-1966); Thomas W. McKnew (1966-1967); Melville Bell Grosvenor (1967-1976); Melvin M. Payne (1976-1987); Gilbert M. Grosvenor (1987-)

Book Service
Established by Melville Bell Grosvenor in 1954. 897, Dec. 1962; 585-586, Oct. 1967; 275, *Aug. 1982*
Awards won. 848, 850, *Dec. 1981*
Book Service Division. 851-852, *Dec. 1981*
See also Books, NGS, for titles

Cartographic Division
New Perspective on the World. By John B. Garver, Jr. 911-913, *Dec. 1988*
President's Page. By Gilbert M. Grosvenor. *May 1984*
First color photomosaic of the United States produced by combining Landsat imagery and the General Electric Company's color-mosaic expertise with the Society's map program. 140-147, *July 1976*
Mapping the moon. 240-245, *Feb. 1969*
Established in 1915. 576, Oct. 1963; 463, Oct. 1966; 585, *Oct. 1967*
Chamberlin Trimetric Projection. 841, June 1947; 826, June 1949; 399, Mar. 1950; 417, Mar. 1952; 591, *Apr. 1964*
First known use of Two Point Equidistant Projection in mapping Asia. 418, Mar. 1951; 751, *Dec. 1959*
Awarded U. S. Air Force Association's citation of honor for cartographic aid during World War II. 846, *Dec. 1949*
First use of Transverse Mercator Projection for mapping a long airplane flight (1921). 524, *Oct. 1947*
See also Atlases, NGS; Globes, NGS; Map Supplements; Satellite Finder

Centennial
The National Geographic Society Centennial Award. President's Page. By Gilbert M. Grosvenor. *Dec. 1988*
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Editorial. By Wilbur E. Garrett. 1-2, *Jan. 1988*
President's Page. By Gilbert M. Grosvenor. *Sept. 1987*
Editorial. By Wilbur E. Garrett. 1, *Jan. 1987*
Editorial. By Wilbur E. Garrett. 1, *Jan. 1986*

Committee for Research and Exploration
Sponsorship of symposium, "Earth '88: Changing Geographic Perspectives." President's Page. By Gilbert M. Grosvenor. Jan. 1988; 766-771, *Dec. 1988*
President's Page. By Gilbert M. Grosvenor. *Dec. 1986*
Editorial. By Gilbert M. Grosvenor. 729, *June 1978*
Editorial. By Gilbert M. Grosvenor. 159, *Aug. 1976*
Chairman. Frederick V. Coville (1920-1936); Lyman J. Briggs (1937-1959); Leonard C. Carmichael (1960-1973); Alexander Wetmore (1974-1975); Melvin M. Payne (1975-)
Chairman Emeritus. Alexander Wetmore (1975-1978)
Vice Chairmen. Alexander Wetmore (1937-1973); Melvin M. Payne (1964-1975); T. Dale Stewart (1979-); Barry C. Bishop (1984-)

Dues
Use of funds. 566, Oct. 1963; 679, May 1964; 880, Dec. 1964; 102, 105, July 1965; 587, *Oct. 1967*

Education Foundation
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
President Grosvenor Announces the National Geographic Society Education Foundation. By Lloyd H. Elliott. 329A-329D, *Mar. 1988*

Educational Products
President's Page. By Gilbert M. Grosvenor. Sept. 1984; Jan. 1987; *Sept. 1988*
Schoolroom aids provided by the National Geographic Society. 468, Apr. 1914; 343, Apr. 1920; 161-162, Jan. 1936; 366, Sept. 1941; 824, *Dec. 1941*
Sight-seeing in School: Taking Twenty Million Children on a Picture Tour of the World. By Jessie L. Burrall. 489-503, *June 1919*
Monographs on the physical features of the United States, to be prepared for use in the public schools. 225-227, *Dec. 29, 1894*
See also Atlases; Books; Films and Filmstrips; Globes; Map Supplements; NGM: Indexes; Records and Sound Sheets; Television Films; WORLD

Employees
Staff Awards for Distinguished Service. President's Page. By Gilbert M. Grosvenor. *June 1988*
President's Page. By Gilbert M. Grosvenor. *Aug. 1987*
Number of. 253, 261, Aug. 1949; 443, Mar. 1960; 585, Oct. 1963; 678, 679, May 1964; 102, 108, 112-113, 118, July 1965; 459, Oct. 1966; 208, *Feb. 1972*

Essay Contests
Prizes for Essays on Norse Discoveries in America. 31-32, Jan. 1899; 246, *June 1900*
Important Announcement Concerning Essays (Subject: River Systems of the United States). 227-228, *Dec. 29, 1894*
Geographic Prizes (Certificates and medals awarded annually to public high school students writing the best essay on geography). 206-208, *Feb. 8, 1893*

Excursions and Field Meetings
Luray Caverns, Virginia, May 26, 1906. 358-362, *June 1906*
Luray Caverns, Virginia, May 19, 1906. 302, May 1906; 358-362, *June 1906*
Annapolis, Maryland, May 9, 1903. 217, *May 1903*
Gettysburg, Pennsylvania, May 17, 1902. 150, *Apr. 1902*
Brandywine, Delaware, May 18, 1901. 208, *May 1901*
Eclipse expedition to Norfolk, Virginia, May 27-28, 1900. 320, *Aug. 1900*
Eclipse: The Scientific Work of the National Geographic Society's Eclipse Expedition to Norfolk, Virginia, May 27-28, 1900. By Simon Newcomb. 321-324, *Aug. 1900*
Harpers Ferry, West Virginia, May 14, 1898. 414, *Sept. 1898*

The National Geographic Society flag represents the blue sky, brown earth, and green ocean. ROBERT F. OAKES, NGS

Naval Observatory, Washington, D. C., November 13, 1897. 31, *Jan. 1898*
High Island, Potomac River, Maryland, November 6, 1897. 366, *Dec. 1897*
Cabin John Bridge, Maryland, October 2, 1897. 365-366, *Dec. 1897*
Manassas Gap, Virginia, May 22, 1897. 192, *June 1897*
Charlottesville, Virginia: Eighth Annual Field Meeting of the National Geographic Society: Monticello and University of Virginia, visited, May 16, 1896. 216, June 1896; 259-260, *Aug. 1896*
Virginia Beach and the Dismal Swamp, April 20, 1894. xvi, *Oct. 31, 1895*
Fredericksburg, Virginia: Announcement of the Seventh Annual Excursion and Field Meeting, Saturday, May 4, 1895. foldout, *Apr. 20, 1895*
Potomac River cruise to Indian Head and Marshall Hall, May 1, 1893. xiii, *May 5, 1894*
Annapolis, Maryland: State House, Naval Academy, Chase Mansion, visited, May 27, 1892. xvii, *Feb. 20, 1893*

Expeditions and Research
First expedition: Mount St. Elias Expedition. 288, Apr. 1891; 39-40, Apr. 30, 1891; vii-ix, Feb. 20, 1893; 177, *Jan. 31, 1894*
See also by subject; *and* NGS: Research and Exploration

Explorers Hall
Great Globe. 673-675, 677, 679, May 1964; 880, Dec. 1964; 578-579, Oct. 1967; President's Page. By Gilbert M. Grosvenor. *Oct. 1987*
History. 791, 794, June 1934.; 338, Mar. 1942; 657, May 1942; 91, Jan. 1957; 578-579, *Oct. 1967*
President Johnson Dedicates the Society's New Headquarters. 669-679, *May 1964*

Films and Filmstrips
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Number of filmstrips. 851, *Dec. 1981*
The World in Geographic Filmstrips. By Melvin M. Payne. 134-137, *Jan. 1968*
See also Television Films

First Meetings
Editorial. By Wilbur E. Garrett. 1, *Jan. 1988*
Regular meeting, February 17, 1888, Law Lecture Room, Columbian University: Inaugural address, by the President of the Society. 87, Oct. 1888; 2-7, *Jan. 1988*
For organizing a geographic society, Cosmos Club, January 13, 1888. 164, Apr. 1889; 131, *Jan. 1936*
For the purpose of incorporating, January 20, 1888; 165, Apr., 1889; 131, *Jan. 1936*
Of the Society, after incorporation, January 27, 1888: Election of officers and adoption of by-laws. 165, Apr. 1889; 131, 134, *Jan. 1936*

Flag
NGS flag designed by Elsie May Bell Grosvenor. 637, May 1949; 145, Aug. 1953; 459, 516, 557, 564, Oct. 1963; 100, 101, 116, 118, *July 1965*

Founders and Founding
Editorial. By Wilbur E. Garrett. 1-2, *Jan. 1988*
1888: Introductory Address by the President, Mr. Gardiner Greene Hubbard. 2-7, *Jan. 1988*
"Tell me if your civilization is interesting": Those Electrifying Eighteen Eighties When the National Geographic Society Was Born. By William H. Goetzmann. Illustrated by Fred Otnes. Included: "Founding of the National Geographic Society, January 13, 1888" (painting by Stanley Meltzoff). 8-37, *Jan. 1988*
President's Page. By Gilbert M. Grosvenor. *Jan. 1984*
Thirty-three eminent men met at the Cosmos Club, January 13, 1888. 387, Mar. 1955; 807, 830, June 1960; 1-3, Jan. 1963; 518, 573-574, Oct. 1963; 880, *Dec. 1964*

Geography Education Programs
President's Page. By Gilbert M. Grosvenor. Feb. 1986; July 1986; Sept. 1986; Nov. 1987; Sept. 1988; *Nov. 1988*

Globes. *See* Globe, Great; Globes, NGS

Grants
President's Page. By Gilbert M. Grosvenor. Dec. 1986; Jan. 1987; *June 1987*
Titanic search. President's Page. By Gilbert M. Grosvenor. *Dec. 1985*
Amount of annual funding. 889, 893, 899, Dec. 1962; 571, Oct. 1963; 163, Feb. 1964; 582, 586, Oct. 1967; 148, July 1971; 873, Dec. 1973; 226, Aug. 1976; 274, Aug. 1982; 824, *Dec. 1982*
See also NGS: Research and Exploration; NGS: Land Grants

Headquarters
Hubbard Memorial Hall:
Mural and paintings by N. C. Wyeth. 568, Nov. 1928; 93, Jan. 1929; 77, July 1938; 38, July 1948; 105, *July 1965*

First headquarters of the Society. 273, Mar. 1947; 65, July 1954; 564, *Oct. 1963*
Laying of cornerstone (April 26, 1902). 420, *Mar. 1957*
A gift to the Society by the family of the first President, Gardiner Greene Hubbard. 24, Jan. 1906; 1008, Nov. 1909; 251, Feb. 1913; 124, 152, *Jan. 1936*
The Home of the National Geographic Society. 342, *July 1905*
The New Home of the National Geographic Society. 176-181, *Apr. 1904*
The Hubbard Memorial Building. 174-176, *May 1902*
M Street Building:
Our Society Opens New Doors. By Gilbert M. Grosvenor. 554-560, *Oct. 1984*
President's Page. By Gilbert M. Grosvenor. *Oct. 1984*
Groundbreaking for third headquarters building. 848, *Dec. 1981*
16th Street Building:
History. 410, Sept. 1948; 91, Jan. 1957; 669, May 1964; 588, *Oct. 1967*
The National Geographic Society and Its New Building. 455-470, *Apr. 1914*
Board of Managers, in December, 1912, authorized the construction of a building, on the property adjacent to Hubbard Memorial Hall. 251, *Feb. 1913*
17th Street Building:
Dedication: President Johnson Dedicates the Society's New Headquarters. 669-679, *May 1964*
See also NGS: Explorers Hall

History

The Explorers: A Century of Discovery. 316, Sept. 1988; cover, *Oct. 1988*
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Three Men Who Made the Magazine. By Charles McCarry. 287-316, *Sept. 1988*
1888: Introductory Address by the President, Mr. Gardiner Greene Hubbard. 2-7, *Jan. 1988*
"Tell me if your civilization is interesting": Those Electrifying Eighteen Eighties When the National Geographic Society Was Born. By William H. Goetzmann. Illustrated by Fred Otnes. Included: "Founding of the National Geographic Society, January 13, 1888" (painting by Stanley Meltzoff). 8-37, *Jan. 1988*
The National Geographic Society: 100 Years of Adventure and Discovery (Bryan). President's Page. By Gilbert M. Grosvenor. *Sept. 1987*
President's Page. By Gilbert M. Grosvenor. *Jan. 1984*
Melville Bell Grosvenor: A Decade of Innovation, a Lifetime of Service. By Bart McDowell. 270-278, *Aug. 1982*
Election of officers. 427, *Oct. 1980*
90th Anniversary. 1, *Jan. 1978*
Trustees Elect New Society Officers. 224-227, *Aug. 1976*
Frederick G. Vosburgh Retires as Editor; Gilbert M. Grosvenor Succeeds Him. By Melvin M. Payne. 838-843, *Dec. 1970*
Robert V. Fleming, 1890-1967. By Melville Bell Grosvenor. 526-529, *Apr. 1968*
National Geographic Society Trustees Elect Key Executives. 576-590, *Oct. 1967*
To Gilbert Grosvenor: A Monthly Monument 25 Miles High. By Frederick G. Vosburgh and the staff of the National Geographic Society. 445-487, *Oct. 1966*
First Lady of the National Geographic (Elsie May Bell Grosvenor). By Gilbert Hovey Grosvenor. 101-121, *July 1965*
The National Geographic Society and Its Magazine: A History. By Gilbert H. Grosvenor. 582A, Oct. 1957; 880, *Dec. 1964*
On the Geographic's 75th Birthday–Our Best to You. Introduction to anniversary issue. By Melville Bell Grosvenor. 459, *Oct. 1963*
The Romance of the Geographic: National Geographic Magazine Observes Its Diamond Anniversary. By Gilbert Hovey Grosvenor. 516-585, *Oct. 1963*
75 Years Exploring Earth, Sea, and Sky: National Geographic Society Observes Its Diamond Anniversary. By Melvin M. Payne. 1-43, *Jan. 1963*
First transcontinental telephone conversation (January 25, 1915). 58, *Jan. 1958*
John Oliver La Gorce Is Elected Vice-Chairman of the Board, Melville Bell Grosvenor President and Editor of the National Geographic Society. 419-423, *Mar. 1957*
Gilbert Grosvenor Is Elected Chairman of the Board, John Oliver La Gorce Chosen President and Editor of the National Geographic Society. 65, 65A-65H, 66, *July 1954*
Gilbert Grosvenor's Golden Jubilee. By Albert W. Atwood. 253-261, *Aug. 1949*
The National Geographic Society and Its Magazine. By Gilbert Grosvenor. Reprint of the Foreword to the Cumulative Index to the National Geographic Magazine, 1899 to 1946. 116 pages. 1936; rev. ed. *1948*
First voice voyages via telephone taken to the four corners of the United States by 800 NGS members (January 7, 1916). 278, *Mar. 1947*
Henry Gannett, President of the National Geographic Society 1910-1914. By S.N.D. North. 34 pages. *1915*
The National Geographic Society. By John Hyde. Note: Early history of the Society. 220-223, *June 1899*

Illustrations Library

World's largest library of color transparencies. 136, Jan. 1968; 149, *July 1975*
Franklin L. Fisher's contribution. 692, *Nov. 1953*

Intern Program

President's Page. By Gilbert M. Grosvenor. *Feb. 1985*

Inventions

Shutterless camera designed by Emory Kristof. 492, *Apr. 1975*
OceanEye camera housing, designed by Bates Littlehales. 271, 277, *Aug. 1971*
Chamberlin Trimetric Projection. 841, June 1947; 826, June 1949; 399, Mar. 1950; 417, Mar. 1952; 591, *Apr. 1964*
Compass invented by Albert H. Bumstead. 442, Oct. 1947; 469, Oct. 1953; 754, Dec. 1953; 160, Aug. 1956; 38, July 1957; 22, *Jan. 1963*

Explorers of the North and South polar areas pose in front of Society headquarters in 1913; Robert E. Peary, with cane, stands next to Roald Amundsen, third from left.

"Geometer," used with NGS globes. 698-701, May 1961; 875, Dec. 1961; 897, *Dec. 1962*
Photo-composing machine, invented by Albert H. Bumstead and further developed by his son, Newman Bumstead. 419, *Mar. 1953*

Land Grants
Russell Cave, Alabama, presented to the people of the United States. 438, Mar. 1958; 614, May 1958; 36, Jan. 1963; 808, June 1964; 440, Sept. 1967; 851, *June 1973*
Sequoia National Park, California: The NGS and its members contributed to the purchase of 2,239 acres. 679, 680, May 1951; 792, 794, June 1954; 552, Oct. 1957; 597, 614, May 1958; 162, 176, Aug. 1959; 38, Jan. 1963; 545, Oct. 1963; 107, July 1965; 627, 630, May 1966; 1, 2, *July 1966*
Shenandoah National Park, Virginia, increased by gift of 1,000 acres in 1926. 18, July 1949; 40, *Jan. 1963*

Lecturers
John Wesley Powell, first lecturer. President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Theodore Roosevelt. 587, Oct. 1958; 542, 585, Oct. 1963; 732, Nov. 1963; 468, *Oct. 1966*
William Howard Taft. 585, Oct. 1963; 549, *Oct. 1965*
Louis S. B. Leakey. 194-195, *Feb. 1965*
John W. Foster. 549, *Oct. 1963*
Richard E. Byrd. 42, 44, *July 1957*
Mrs. Robert E. Peary. 531, *Oct. 1954*
British Mount Everest Expedition members. 64, *July 1954*
Donald B. MacMillan. 563, *Apr. 1953*
William H. Fechtler. 614-615, *Nov. 1952*
H. H. Arnold. 400, *Mar. 1950*

Lectures
First lecture, Feb. 17, 1888. 113, July 1965; President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Chairman of Lecture Committee. 843, *Dec. 1970*
Annual series of lectures has been given in Constitution Hall since 1933. 565, 573, *Nov. 1951*
Lecture courses, self-supporting. 320, *Mar. 1915*
The National Geographic Society: The Forthcoming Course of Lectures on the Effects of Geographic Environment in Developing the Civilization of the World. 1-6, *Feb. 1897*
The National Geographic Society: Synopsis of a Course of Lectures on the Effects of Geographic Environment in Developing the Civilization of the World. By Gardiner G. Hubbard. 29-32, *Jan. 1897*
Lecture courses, defined. 257-258, *Aug. 1896*
Public lectures. 289, *Apr. 1891*

Maps. *See* Map Supplements

Medals
Resolutions concerning medals. 486-487, *May 1909*
Writer of best essay on geography to receive Gold Medal. 207, *Feb. 8, 1893*
See also Grosvenor Medal; Hubbard Medal; La Gorce Medal; Special Gold Medal

Media Diversification
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Melvin M. Payne encouraged diversification. 227, *Aug. 1976*

Members and Membership
President's Page. By Gilbert M. Grosvenor. Dec. 1984; Aug. 1987; May 1988; *Oct. 1988*
Editorial. By Wilbur E. Garrett. 139, *Aug. 1987*
One million new members joined for 1983. 1, *Jan. 1983*
Number of members. 848, *Dec. 1981*
Number of charter members (205). 689, *Nov. 1964*
Our Society Welcomes Its 3,000,000th Member. By Melville Bell Grosvenor. 579-582, *Apr. 1962*

Membership Center Building
President's Page. By Gilbert M. Grosvenor. *Aug. 1987*
Construction. 590, Oct. 1967; 225, *Aug. 1976*

Membership in the International Union for Conservation of Nature and Natural Resources
President's Page. By Gilbert M. Grosvenor. *Feb. 1988*

Museum
Exhibits. 579, Nov. 1931; 259, Sept. 1933; 481, 485, Oct. 1935; 670, *June 1937*
See also NGS: Explorers Hall

Musical Composition
The "National Geographic Society March," composed and dedicated by Captain Thomas F. Darcy, leader of the United States Army Band, Washington. 122, *Jan. 1936*

News Service
President's Page. By Gilbert M. Grosvenor. June 1984; *Aug. 1985*
News features sent to 2,500 editors of press, radio, and television. 836, *Dec. 1959*

Officers
Election of officers. 427, *Oct. 1980*
Trustees Elect New Society Officers. 224-227, *Aug. 1976*
National Geographic Society Trustees Elect Key Executives. 576-590, *Oct. 1967*
John Oliver La Gorce Is Elected Vice-Chairman of the Board, Melville Bell Grosvenor President and Editor of the National Geographic Society. 419-423, *Mar. 1957*
Gilbert Grosvenor Is Elected Chairman of the Board, John Oliver La Gorce Chosen President and Editor of the National Geographic Society. 65, 65A-65H, 66, *July 1954*

Photographic Laboratories. 308, Mar. 1948; 436, Apr. 1953; 567, Apr. 1959; 864, Dec. 1959; 540, 575, 581, Oct. 1963; 193, Feb. 1967; 729, Nov. 1967; 644, 675, May 1970; 785, Dec. 1970; 244, Feb. 1973; 237, 247, *Aug. 1976*

Photographic Library. *See* NGS: Illustrations Library

Photography. *See* NGM: Awards Received; NGM: Photographs, *and* Photography

President
Gardiner Greene Hubbard (1888-1897); Alexander Graham Bell (1898-1903); W J McGee (1904); Grove Karl Gilbert (1904); Willis L. Moore (1905-1909); Henry Gannett (1910-1914); O. H. Tittmann (1915-1919); John Elliott Pillsbury (1919); Gilbert Hovey Grosvenor (1920-1954); John Oliver La Gorce (1954-1957); Melville Bell Grosvenor (1957-1967); Melvin M. Payne (1967-1976); Robert E. Doyle (1976-1980); Gilbert M. Grosvenor (1980-)

President's Report
President's Page. By Gilbert M. Grosvenor. *Dec. 1986*
President's Report to Members. By Gilbert M. Grosvenor. 848-852, Dec. 1981; 820-824, *Dec. 1982*
Your Society's President Reports: A Year of Widening Horizons. By Melville Bell Grosvenor. 888-906, *Dec. 1962*
Your Society Takes Giant New Steps: The President's Annual Message to Members. By Melville Bell Grosvenor. 874-886, *Dec. 1961*
Exploring an Epic Year. By Melville Bell Grosvenor. 874-886, *Dec. 1960*
Around the World and the Calendar with the Geographic. By Melville Bell Grosvenor. 832-866, *Dec. 1959*

Public Service Grants
President's Page. By Gilbert M. Grosvenor. *Apr. 1988*

Public Service Publications
Equal Justice Under the Law: The Supreme Court in American Life. By Mary Ann Harrell. Published in cooperation with The Foundation of the Federal Bar Association. 151 pages. 1965; rev. ed. *1988*
The Living White House. By Lonnelle Aikman. Published in cooperation with the White House Historical Association. 151 pages. 1966; rev. ed. *1987*
The President's House: A History. By William Seale. Published in cooperation with the White House Historical Association. 2 volumes, 1224 pages. *1986*
Liberty: The Statue and the American Dream. By Leslie Allen. The official book for the Centennial of the Statue of Liberty published by the Statue of Liberty–Ellis Island Foundation, Inc. Prepared and produced as a public service by NGS. 304 pages. *1985*
We, The People: The Story of the United States Capitol, Its Past and Its Promise. By Lonnelle Aikman. Photos by George F. Mobley and Joseph H. Bailey. Published in cooperation with the United States Capitol Historical Society. 143 pages. 1963; rev. ed. *1985*
The First Ladies. By Margaret Brown Klapthor. Published in cooperation with the White House Historical Association. 87 pages. 1975; rev. ed. *1983*

Gilbert Hovey Grosvenor, Editor of NATIONAL GEOGRAPHIC, examines a globe in 1922 with his father and his son Melville, later to be Editor himself. CHARLES MARTIN, NGS

■■ *The White House: An Historic Guide.* Published in cooperation with the White House Historical Association. 159 pages. 1962; rev. ed. *1982*

■■ *George Washington–Man and Monument.* By Frank Freidel and Lonnelle Aikman. Published in cooperation with the Washington National Monument Association. 69 pages. 1965; rev. ed. *1973*

Publications. *See* Atlases; Books; National Geographic Magazine; NGM: Indexes; NGS: News Service; *National Geographic Research; National Geographic Traveler;* WORLD

Purpose of the Society
Editorial. By Wilbur E. Garrett. 1, Jan. 1986; 1, Jan. 1987; 1, *Jan. 1988*
President's Page. By Gilbert M. Grosvenor. *Jan. 1984*

Recordings. *See* Records and Sound Sheets

Research and Exploration
President's Page. By Gilbert M. Grosvenor. Jan. 1984; June 1984; Aug. 1984; Nov. 1984; July 1987; *Dec. 1987*
Amount spent annually. 824, *Dec. 1982*
Research fund established. 486, *May 1909*
See also NGS: Committee for Research and Exploration; Research Reports

Seal
The Seal of the National Geographic Society appears on one side of the Hubbard Medal. 564, *Apr. 1953*
Authorization and design of the Society's new seal. 215, June 1896; 28, 34, *July 1946*

Secretary
O. P. Austin (1904-1932); Thomas W. McKnew (1932-1962); Melvin M. Payne (1962-1967); Robert E. Doyle (1967-1976); Owen R. Anderson (1976-1980); Edwin W. Snider (1980-)

Special Publications
Number of copies distributed (nearly eight million). 865, *June 1973*
Editorial Director: Gilbert M. Grosvenor. 843, *Dec. 1970*
Chief: Robert L. Breeden. 411, Mar. 1966; 884, *June 1970*
Adventure, science, history, exploration spring to life in your Society's new program of Special Publications. By Melville Bell Grosvenor. 408-417, *Mar. 1966*
See also Books, NGS, for titles

Symposium
Will We Mend Our Earth? By Gilbert M. Grosvenor. 766-771, *Dec. 1988*
"Earth '88: Changing Geographic Perspectives." President's Page. By Gilbert M. Grosvenor. *Jan. 1988*

Television and Educational Films
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Foreign-language versions. President's Page. By Gilbert M. Grosvenor. *July 1988*
Cable TV programming (Explorer). President's Page. By Gilbert M. Grosvenor. Mar. 1985; Apr. 1985; *Jan. 1987*
Resource Guide. President's Page. By Gilbert M. Grosvenor. *Jan. 1986*
Great Moments With National Geographic. President's Page; cover, *Mar. 1985*
Awards received. President's Page. *Jan. 1985*
Director: Dennis Kane. President's Page. *Jan. 1985*
Awards Received. 848, 850, Dec. 1981; 824, *Dec. 1982*
Emmy Awards. 731, Dec. 1974; 1, Jan. 1979; 848, 850, Dec. 1981; 275, *Aug. 1982*
George Foster Peabody Award. 587, Oct. 1967; 850, *Dec. 1981*
Number of subjects available. 583, *Nov. 1975*
Director: Robert C. Doyle. 449-451, Sept. 1965; 586, 587, *Oct. 1967*
See also Television Films, for titles

Treasurer
John Joy Edson (1904-1935); Robert V. Fleming (1935-1967); Hilleary F. Hoskinson (1967-1982); Alfred J. Hayre (1982-)

Vice President
John Oliver La Gorce (1922-1954); Melville Bell Grosvenor (1954-1957); Thomas W. McKnew (1954-1962); Melvin M. Payne (1958-1962); Robert V. Fleming (1958-1967); Frederick G. Vosburgh (1958-1970); Robert E. Doyle (1961-1976); Gilbert M. Grosvenor (1967-1980)

Vice President, Executive
Melvin M. Payne (1962-1967) 582, Apr. 1962; 865, June 1967; 583, Oct. 1967; 274, *Aug. 1982*
Thomas W. McKnew (1958-1961) 882, 883, Dec. 1960; 579, Apr. 1962; 148, Feb. 1965; 588, *Oct. 1967*

Vice President for Research and Exploration
Leonard C. Carmichael (1964-1973) 525, Apr. 1965; 864, June 1967; 441, 442, Sept. 1967; 582, 586, *Oct. 1967*

*The **NATIONAL** Geographic Society:*
■■ *100 Years of Adventure and Discovery.* By C.D.B. Bryan. Published by Harry N. Abrams, Inc. 484 pages. *1987*

*The **NATIONAL** Geographic Society and*
■■ *Its Magazine.* By Gilbert Grosvenor. 116 pages. 1936; rev. ed. *1948*

NATIONAL GEOGRAPHIC SOCIETY EDUCATION FOUNDATION:
President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
President Grosvenor Announces the National Geographic Society Education Foundation. By Lloyd H. Elliott. 329A-329D, *Mar. 1988*

NATIONAL GEOGRAPHIC SOCIETY KIDS NETWORK:
President's Page. By Gilbert M. Grosvenor. *Apr. 1987*

NATIONAL GEOGRAPHIC SOCIETY–LIBRARY OF CONGRESS MAP PRESERVATION PROJECT:
President's Page. By Gilbert M. Grosvenor. *Apr. 1988*

NATIONAL GEOGRAPHIC SOCIETY–PALOMAR OBSERVATORY SKY SURVEYS:
❁ *Journey Into the Universe Through Time and Space; National Geographic-Palomar Sky Survey Charting the Heavens. June 1983*
Exploring the Farthest Reaches of Space. By George O. Abell. NGS research grant. 782-790, *Dec. 1956*
Sky Survey Charts the Universe. By Ira Sprague Bowen. NGS research grant. 780-781, *Dec. 1956*
Completing the Atlas of the Universe. By Ira Sprague Bowen. NGS research grant. 185-190, *Aug. 1955*
Our Universe Unfolds New Wonders. By Albert G. Wilson. NGS research grant. 245-260, *Feb. 1952*

Mapping the Unknown Universe. By F. Barrows Colton. NGS research grant. 401-420, *Sept. 1950*

The NATIONAL Geographic Society-U. S. Army Air Corps Stratosphere Flight of 1934 in the Balloon Explorer. 122 pages. *1935*

NATIONAL GEOGRAPHIC TRAVELER:

Foreign-language editions. President's Page. By Gilbert M. Grosvenor. *July 1988*

New journal announced. President's Page. By Gilbert M. Grosvenor. *Feb. 1984*

***NATIONAL GEOGRAPHIC* WORLD** (Magazine for Young Readers):

Foreign-language editions. President's Page. By Gilbert M. Grosvenor. *July 1988*

Circulation. 851, *Dec. 1981*

Editorial. By Gilbert M. Grosvenor. The *School Bulletin* is retired after 56 years; replaced by WORLD. 299, *Sept. 1975*

Start the World, I Want to Get On! 148-150, *July 1975*

NATIONAL GEOGRAPHY BEE:

President's Page. By Gilbert M. Grosvenor. *Nov. 1988*

NATIONAL Growth and National Character. By W J McGee. 185-206, *June 1899*

NATIONAL HISTORICAL PARKS: United States. *See* Chesapeake and Ohio Canal; Harpers Ferry

NATIONAL INSTITUTES OF HEALTH, Bethesda, Maryland:

Capturing Strange Creatures in Colombia. By Marte Latham. Photos by Tor Eigeland. 682-693, *May 1966*

NATIONAL MILITARY PARKS: United States:

Echoes of Shiloh (Shiloh National Military Park, Tennessee). By Shelby Foote. 106-111, *July 1979*

Gettysburg and Vicksburg: the Battle Towns Today. By Robert Paul Jordan. Map notes by Carolyn Bennett Patterson. 4-57, *July 1963*

Heritage of Beauty and History. By Conrad L. Wirth. Included: Antietam, Chickamauga, Gettysburg, Kings Mountain, Shiloh, Vicksburg, Yorktown. 587-661, *May 1958*

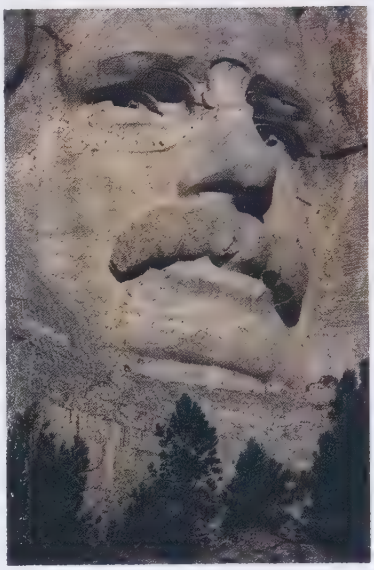
NATIONAL MONUMENTS: United States:

Roosevelt Country: T. R.'s Wilderness Legacy. By John L. Eliot. Photos by Farrell Grehan. 340-363, *Sept. 1982*

America's Federal Lands; The United States. Sept. 1982

America's Wonderlands: The Scenic National Parks and Monuments of the United States. 552 pages. 1959; rev. ed. *1980*

Visiting Our Past: America's Historylands. Included: Companion directory.



Granitic conservationist, President Theodore Roosevelt gazes from South Dakota's Mount Rushmore. FARRELL GREHAN

Visiting Our Past: A Supplemental Guide to Selected Sites. 400 pages. *1977*

Alaska: Rising Northern Star. By Joseph Judge. Photos by Bruce Dale. Included: Proposed monuments: Aniakchak Caldera, Cape Krusenstern, Harding Icefield-Kenai Fjords, Kobuk. 730-767, *June 1975*

Preserving America's Last Great Wilderness (Alaska). By David Jeffery. Included: Proposed monuments: Aniakchak Caldera, Cape Krusenstern, Harding Icefield-Kenai Fjords, Kobuk. 769-791, *June 1975*

America's Historylands, Touring Our Landmarks of Liberty. Companion volume to *America's Wonderlands.* 575 pages. 1962; rev. ed. *1967*

Today and Tomorrow in Our National Parks. By Melville Bell Grosvenor. Included: Glacier Bay National Monument. 1-5, *July 1966*

The Mission Called 66: Today in Our National Parks. By Conrad L. Wirth. Included: Death Valley, Dinosaur, Rainbow Bridge National Monuments. 7-47, *July 1966*

Parkscape, U.S.A.: Tomorrow in Our National Parks. By George B. Hartzog, Jr. Included: Buck Island Reef, Chesapeake and Ohio Canal, Glacier Bay, Muir Woods, Organ Pipe Cactus, Statue of Liberty. 48-93, *July 1966*

Heritage of Beauty and History. By Conrad L. Wirth. Included: Aztec Ruins, Bandelier, Castillo de San Marcos, Cedar Breaks, Custer Battlefield, Death Valley, Devils Tower, Dinosaur, Edison Laboratory, El Morro, Fort Frederica, Fort Laramie, Fort McHenry, Fort Sumter, Great Sand Dunes, Harpers Ferry, Lava Beds, Organ Pipe Cactus, Petrified Forest, Rainbow Bridge, Russell Cave, Saguaro, Scotts Bluff, Tuzigoot, Walnut Canyon National Monuments. 587-661, *May 1958*

National Parks, Monuments and Shrines of the United States and Canada. Atlas series. Text on reverse. *May 1958*

Shrines of Each Patriot's Devotion. By Frederick G. Vosburgh. Contents: Ackia Battleground, Andrew Johnson, Big Hole, Cabrillo, Custer Battlefield, El Morro, Father Millet Cross, Fort Matanzas, Fort Pulaski, Fort Vancouver, George Washington Birthplace, Homestead, Lava Beds, Perry's Victory and International Peace Memorial, Pipe Spring, Scotts Bluff, Statue of Liberty, Verendrye. 51-82, *Jan. 1949*

Utah's Arches of Stone. By Jack Breed. Contents: Arches National Monument. 173-192, *Aug. 1947*

Blizzard of Birds: The Tortugas Terns. By Alexander Sprunt, Jr. Included: Fort Jefferson National Monument. 213-230, *Feb. 1947*

New Mexico Melodrama. By Frederick Simpich. Included: Aztec Ruins; Bandelier; El Morro; Pueblo Bonito; White Sands. 529-569, *May 1938*

Arizona Sands, Home of the Cactus King. 521-528, *Apr. 1937*

The Saguaro Forest (Arizona). By H. L. Shantz. 515-532, *Apr. 1937*

Bursts of Color in Sculptured Utah. 593-616, *May 1936*

The White Sands of Alamogordo (New Mexico): A Dry Ocean of Granular Gypsum Billows Under Desert Winds in a New National Playground. By Carl P. Russell. 250-264, *Aug. 1935*

Photographing the Marvels of the West in Colors. By Fred Payne Clatworthy. 694-719, *June 1928*

Bats of the Carlsbad Cavern. By Vernon Bailey. 321-330, *Sept. 1925*

Everyday Life in Pueblo Bonito: As Disclosed by the National Geographic Society's Archeologic Explorations in the Chaco Canyon National Monument, New Mexico. By Neil M. Judd. 227-262, *Sept. 1925*

New Discoveries in Carlsbad Cavern (New Mexico): Vast Subterranean Chambers with Spectacular Decorations Are Explored, Surveyed, and Photographed. By Willis T. Lee. Note: Carlsbad Caverns was a national monument from 1923 until 1930, when it became a national park. 301-319, *Sept. 1925*

Among the "Craters of the Moon": An Account of the First Expeditions Through the Remarkable Volcanic Lava Beds of Southern Idaho. By R. W. Limbert. Note: Craters of the Moon became a national monument on May 2, 1924. 303-328, *Mar. 1924*

A Visit to Carlsbad Cavern: Recent Explorations of a Limestone Cave in the Guadalupe Mountains of New Mexico Reveal a Natural Wonder of the First Magnitude. By Willis T. Lee. 1-40, *Jan. 1924*

The Scenery of North America. By James Bryce. 339-389, *Apr. 1922*

The Pueblo Bonito Expedition of the National Geographic Society. By Neil M. Judd. 323-331, *Mar. 1922*
Our Greatest National Monument: The National Geographic Society Completes Its Explorations in the Valley of Ten Thousand Smokes. By Robert F. Griggs. 219-292, *Sept. 1921*
A New National Geographic Society Expedition: Ruins of Chaco Canyon, New Mexico, Nature-Made Treasure-Chest of Aboriginal American History, To Be Excavated and Studied; Work Begins This Month. 637-643, *June 1921*
The Ten Thousand Smokes Now a National Monument: The President of the United States Sets Aside for the American People the Extraordinary Valley Discovered and Explored by the National Geographic Society. 359-366, *Apr. 1919*
The Valley of Ten Thousand Smokes: An Account of the Discovery and Exploration of the Most Wonderful Volcanic Region in the World. By Robert F. Griggs. 115-169, *Feb. 1918*
The Great Rainbow Natural Bridge of Southern Utah. By Joseph E. Pogue. 1048-1056, *Nov. 1911*
The Great Natural Bridges of Utah. By Byron Cummings. 157-167, *Feb. 1910*
The Wheeler National Monument. 837-840, *Sept. 1909*
The Great Natural Bridges of Utah. 199-204, *Mar. 1907*
Colossal Natural Bridges of Utah. 367-369, *Sept. 1904*
See also Bandelier National Monument; Buck Island Reef National Monument; Castillo de San Marcos; Craters of the Moon National Monument; Death Valley National Monument; Dinosaur National Monument; El Morro; Fort Jefferson National Monument; Glacier Bay National Monument; Marble Canyon National Monument; Natural Bridges National Monument; Navajo National Monument; Organ Pipe Cactus National Monument; Rainbow Bridge National Monument; Russell Cave; White Sands National Monument; *and* Custer, George A., for Custer Battlefield National Monument

NATIONAL MUSEUM: United States. *See* Smithsonian Institution

NATIONAL MUSEUM OF ANTHROPOLOGY, Mexico City, Mexico:
Mexico's Window on the Past. By Bart McDowell. Photos by B. Anthony Stewart. 492-519, *Oct. 1968*

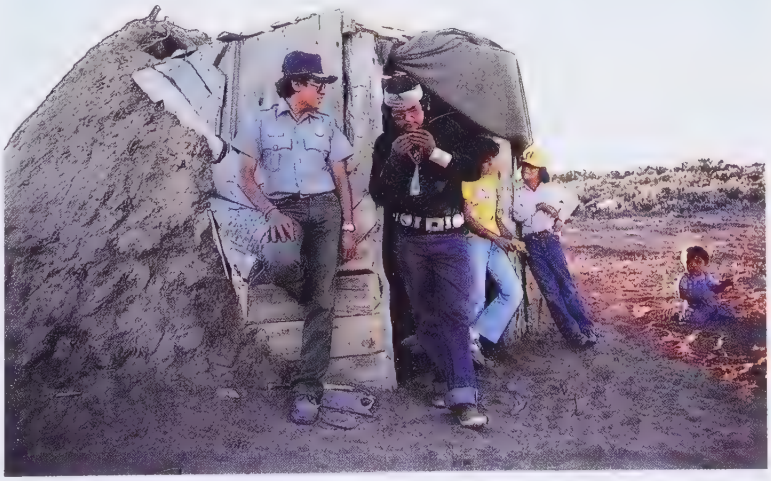
NATIONAL MUSEUM OF CANADA: Expeditions:
Vanished Mystery Men of Hudson Bay. By Henry B. Collins. NGS research grant. 669-687, *Nov. 1956*

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION: Study Grants:
Underwater Exploration: Galapagos Rift. 685, *Nov. 1979*
This Changing Earth. By Samuel W. Matthews. 1-37, *Jan. 1973*
We're Doing Something About the Weather! By Walter Orr Roberts. 518-555, *Apr. 1972*

NATIONAL OCEANOGRAPHIC PROGRAM: United States:
Thresher: Lesson and Challenge. By James H. Wakelin, Jr. Included: Interagency Committee on Oceanography, Federal Council for Science and Technology, TENOC. 759-763, *June 1964*

NATIONAL OUTDOOR LEADERSHIP SCHOOL:
Wind River Range: Many-treasured Splendor. By Joseph Judge. 198-205, *Feb. 1974*

NATIONAL PARK SERVICE:
Yosemite–Forever? By David S. Boyer. Photos by Jonathan Blair. Included: Duties of rangers. 52-79, *Jan. 1985*
Our National Parks. Photos by David Alan Harvey. 1-152, *July 1979*
The Next 100 Years: A Master Plan for Yellowstone. By George B. Hartzog, Jr. 632-637, *May 1972*
Yellowstone at 100: The Pitfalls of Success. By William S. Ellis. Photos by Jonathan Blair. 616-631, *May 1972*
The Mission Called 66: Today in Our National Parks. By Conrad L. Wirth. Included: Achievements of Mission 66, ten-year program of National Park Service for improvement and expansion of national parks, 1956-1966. 7-47, *July 1966*
Parkscape, U.S.A.: Tomorrow in Our National Parks. By George B. Hartzog, Jr. Included: Future program of National Park Service. 48-93, *July 1966*
Today and Tomorrow in Our National Parks. By Melville Bell Grosvenor. Included: Golden anniversary of National Park Service; history of founding in 1916; plans for the future. 1-5, *July 1966*
Heritage of Beauty and History. By Conrad L. Wirth. Contents: National Battlefield Parks: Manassas: National Battlefield Sites: Antietam; National Historic Sites: Adams Mansion, Fort Raleigh; National Historical Parks: Appomattox Court House, Colonial, Cumberland Gap, Independence, Morristown, Saratoga; National Memorials: House Where Lincoln Died, Lincoln Memorial, Mount Rushmore, Washington Monument, Wright Brothers; National Military Parks: Antietam, Chickamauga, Gettysburg, Kings Mountain, Shiloh, Vicksburg; National Monuments: Aztec Ruins, Bandelier, Castillo de San Marcos, Cedar Breaks, Custer Battlefield, Death Valley, Devils Tower, Dinosaur, Edison Laboratory, El Morro, Fort Frederica, Fort Laramie, Fort McHenry, Fort Sumter, Great Sand Dunes, Harpers Ferry, Katmai, Lava Beds, Organ Pipe Cactus, Petrified Forest, Rainbow Bridge, Russell Cave, Saguaro, Scotts Bluff, Tuzigoot, Walnut Canyon; National Parks: Acadia, Big Bend, Bryce Canyon, Carlsbad Caverns, Crater Lake, Everglades, Glacier, Grand Canyon, Grand Teton, Great Smoky Mountains, Hawaii, Kings Canyon, Lassen Volcanic, Mammoth Cave, Mesa Verde, Mount McKinley, Mount Rainier, Olympic, Rocky Mountain, Sequoia, Shenandoah, Virgin Islands, Wind Cave, Yellowstone, Yosemite, Zion. 587-661, *May 1958*
Shrines of Each Patriot's Devotion. By Frederick G. Vosburgh. 51-82, *Jan. 1949*
Expeditions and Research. *See* Isle Royale; Wetherill Mesa; *and* Tree Snails



Arizona Navajos unwind during a ceremony to cure a Vietnam veteran, wearing his finest jewelry, of illnesses ascribed to the spirits of his enemies. DAVID ALAN HARVEY

NATIONAL PARKS:

Africa

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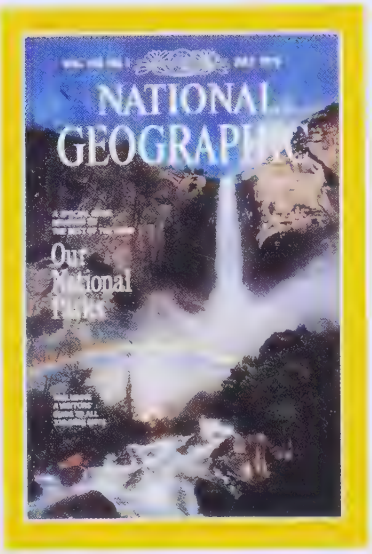

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Threatened by loggers in 1915, a famous California sequoia is surrounded by a 20-man embrace. GILBERT H. GROSVENOR, NGS

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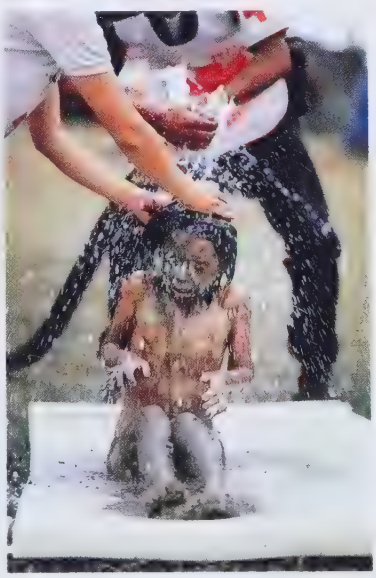

Survivor of a volcanic mudflow in 1985, a little girl in Lérida, Colombia, gets a dousing. ANTHONY SJAU, BLACK STAR

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Injured woman is carried out of ruins in Armero, destroyed by a mudslide following the 1985 eruption of Colombia's volcano Nevado del Ruiz. CAROL GUZY, *MIAMI HERALD*/BLACK STAR

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Mud-smeared man with a clay helmet prepares to portray an evil spirit in a New Guinea tribal dance. MALCOLM S. KIRK

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New Jersey: A State of Surprise. By Jim Hartz. Photos by Bob Krist and Michael S. Yamashita. 568-599, *Nov. 1981*
Close-up: U.S.A., New York, New Jersey, and Pennsylvania. Text on reverse. *Jan. 1978*
Gateway–Elbowroom for the Millions. By Louise Levathes. Contents: Gateway National Recreation Area, New Jersey-New York. 86-97, *July 1979*
The People of New Jersey's Pine Barrens. By John McPhee. Photos by William R. Curtsinger. 52-77, *Jan. 1974*
Can We Save Our Salt Marshes? By Stephen W. Hitchcock. Photos by William R. Curtsinger. 729-765, *June 1972*
Our Changing Atlantic Coastline. By Nathaniel T. Kenney. Photos by B. Anthony Stewart. Included: Atlantic City; Brigantine; Harvey Cedars, Long Beach Island. 860-887, *Dec. 1962*
I'm From New Jersey. By John T. Cunningham. Photos by Volkmar Wentzel. 1-45, *Jan. 1960*
Here's New York Harbor. By Stuart E. Jones. Photos by Robert F. Sisson and David S. Boyer. 773-813, *Dec. 1954*
Today on the Delaware, Penn's Glorious River. By Albert W. Atwood. Photos by Robert F. Sisson. 1-40, *July 1952*
Graduation by Parachute. By John E. Fletcher. Contents: The Parachute Rigger School at Lakehurst. 833-846, *June 1952*
Shad in the Shadow of Skyscrapers. By Dudley B. Martin. Photos by Luis Marden. 359-376, *Mar. 1947*
Dogs of Duty and Devotion. By Frederick G. Vosburgh. Contents: The Seeing Eye Dog School in Morristown. 769-774, *Dec. 1941*
The Reaches of New York City. Included: Adjacent areas of Connecticut, New Jersey, and New York. *Apr. 1939*
New Jersey Now! By E. John Long. 519-584, *May 1933*

Officers Koralja—Andrew, Joseph, and Robert, from left—back each other up on the streets of Jersey City, New Jersey, as only triplets can. M CHAEL S. YAMASHITA

The Wild Blueberry Tamed: The New Industry of the Pine Barrens of New Jersey. By Frederick V. Coville. 535-546, *June 1916*
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NEW Light on an Old Riddle: Stonehenge. By Harold E. Edgerton. Paintings by Brian Hope-Taylor. 846-866, *June 1960*

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Our Navy's Long Submarine Arm. By Allan C. Fisher, Jr. 613-636, *Nov. 1952*

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The **NEW** Map of Europe: Showing the

A volcanic pinnacle on the Navajo reservation in northwestern New Mexico, Ship Rock is a sacred tribal site. DANNY LEHMAN

Boundaries Established by the Peace Conference at Paris and by Subsequent Decisions of the Supreme Council of the Allied and Associated Powers. By Ralph A. Graves. 157-177, *Feb. 1921*

A **NEW** Marine Park Is Born. By Soames Summerhays. Photos by Ron and Valerie Taylor. 630-635, *May 1981*

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New Mexico: Between Frontier and Future. By Bart McDowell. Photos by Danny Lehman. 602-633, *Nov. 1987*

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The Anasazi–Riddles in the Ruins. By Thomas Y. Canby. Photos by Dewitt Jones and David Brill. Paintings by Roy Andersen. 554-592, *Nov. 1982*

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The Mexican Americans: A People on the Move. By Griffin Smith, Jr. Photos by Stephanie Maze. 780-809, *June 1980*

Along the Great Divide. By Mike Edwards. Photos by Nicholas deVore III. 483-515, *Oct. 1979*

Teamwork Helps the Whooping Crane. By Roderick C. Drewien, with Ernie Kuyt. 680-693, *May 1979*

New Mexico's Mountains of Mystery. By Robert Laxalt. Photos by Craig Aurness. 416-436, *Sept. 1978*

Quicksilver and Slow Death. By John J. Putman. Photos by Robert W. Madden. 507-527, *Oct. 1972*

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20th-century Indians Preserve Customs of the Cliff Dwellers. Photos by William Belknap, Jr. Included: Acoma, Jemez, Santa Ana, Santo Domingo, and Zia pueblos. 196-211, *Feb. 1964*

The Long, Lonely Leap. By Joseph W. Kittinger, Jr. Photos by Volkmar Wentzel. 854-873, *Dec. 1960*

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Hunting Uranium Around the World. By Robert D. Nininger. Photos by Volkmar Wentzel. 533-558, *Oct. 1954*

Carlsbad Caverns in Color. By Mason Sutherland. Photos by E. "Tex" Helm. 433-468, *Oct. 1953*

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Adobe New Mexico. By Mason Sutherland. Photos by Justin Locke. 783-830, *Dec. 1949*

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NEW MILLS, Braintree, England:

Silkworms in England Spin for the Queen. By John E. H. Nolan. 689-704, *May 1953*

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NEW Mount McKinley Challenge–Trekking Around the Continent's Highest Peak. By Ned Gillette. 66-79, *July 1979*

Reflected in an antique-shop window, a New Orleans carriage driver awaits hire in the French Quarter. JAMES L. STANFIELD, NGS

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New Orleans and Her River. By Joseph Judge. Photos by James L. Stanfield. 151-187, *Feb. 1971*

Mardi Gras in New Orleans. By Carolyn Bennett Patterson. Photos by Robert F. Sisson and John E. Fletcher. 726-732, *Nov. 1960*

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NEW PROVIDENCE (Island), Bahamas. *See* Nassau

The **NEW** Queen of the Seas. By Melville Bell Grosvenor. 1-30, *July 1942*

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NEW SALEM, Illinois:

Vacation Tour Through Lincoln Land. By Ralph Gray. 141-184, *Feb. 1952*

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A **NEW** Source of Power: Billions of Tons of Lignite, Previously Thought Too Poor Coal for Commercial Use, Are Made Easily Available. By Guy Elliott Mitchell. 935-944, *Nov. 1910*

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The Land Where the Murray Flows. By Louise E. Levathes. Photos by David Robert Austen. 252-278, *Aug. 1985*

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Shark Fishing–An Australian Industry. By Norman Ellison. 369-386, *Sept. 1932*

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Kyoto Says Happy New Year. Photos by George F. Mobley. 852-859, *June 1976*

Mustang, Remote Realm in Nepal. By Michel Peissel. 579-604, *Oct. 1965*

My Life in Forbidden Lhasa. By Heinrich Harrer. 1-48, *July 1955*

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"The Fire That Never Dies." By Harvey Arden. Photos by Steve Wall. Contents: Iroquois Confederacy. 375-403, *Sept. 1987*

Long Island's Quiet Side (East End). By Jane Snow. Photos by Sam Abell. 662-685, *May 1980*

The Hudson: "That River's Alive." By Alice J. Hall. Photos by Ted Spiegel. 62-89, *Jan. 1978*

Close-up: U.S.A., New York, New Jersey, and Pennsylvania. Text on reverse. *Jan. 1978*

New York's Land of Dreamers and Doers (Finger Lakes Region). By Ethel A. Starbird. Photos by Nathan Benn. 702-724, *May 1977*

My Backyard, the Adirondacks. By Anne LaBastille. Photos by David Alan Harvey. 616-639, *May 1975*

North Through History Aboard *White Mist.* By Melville Bell Grosvenor. Photos by Edwin Stuart Grosvenor. 1-55, *July 1970*

From Sword to Scythe in Champlain Country. By Ethel A. Starbird. Photos by B. Anthony Stewart and Emory Kristof. 153-201, *Aug. 1967*

Niagara Falls, Servant of Good Neighbors. Photos by Walter Meayers Edwards. 574-587, *Apr. 1963*

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Henry Hudson's River. By Willard Price. Photos by Wayne Miller. 364-403, *Mar. 1962*

Nomad Sails Long Island Sound. By Thomas Horgan. 295-338, *Sept. 1957*

New York State's New Main Street (Thruway). By Matt C. McDade. 567-618, *Nov. 1956*

Today on the Delaware, Penn's Glorious River. By Albert W. Atwood. Photos by Robert F. Sisson. 1-40, *July 1952*

Duck Hunting with a Color Camera. By Arthur A. Allen. 514-539, *Oct. 1951*

Long Island Outgrows the Country. By Howell Walker. Photos by B. Anthony Stewart. 279-326, *Mar. 1951*

Down the Susquehanna by Canoe. By Ralph Gray. Photos by Walter Meayers Edwards. 73-120, *July 1950*

Skyline Trail from Maine to Georgia. By Andrew H. Brown. Photos by Robert F. Sisson. 219-251, *Aug. 1949*

Shrines of Each Patriot's Devotion. By Frederick G. Vosburgh. 51-82, *Jan. 1949*

The Mighty Hudson. By Albert W. Atwood. Photos by B. Anthony Stewart. 1-36, *July 1948*

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The Reaches of New York City. Included: Adjacent areas of Connecticut, New Jersey, and New York. *Apr. 1939*

New York State's Air-Conditioned Roof (Adirondacks). By Frederick G. Vosburgh. 715-748, *June 1938*

New York–An Empire Within a Republic. By William Joseph Showalter. Included: Greater New York...Metropolis of Mankind, supplement from an aërial photo by Albert W. Stevens. 513-584, *Nov. 1933*

Niagara at the Battle Front. By William

The Flatiron Building dominates New York City's Madison Square in 1917.

FROM NORMAN THOMAS AND W. W. ROCK

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The New Erie Canal. 568-570, *Dec. 1905*
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Shawangunk Mountain. By N. H. Darton. 23-34, *Mar. 17, 1894*
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NEW YORK, New York:
Liberty Lifts Her Lamp Once More. By Alice J. Hall. 2-19, *July 1986*
New York Harbor–The Golden Door. By Erla Zwingle. Photos by Bruce Davidson. 21-43, *July 1986*
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Brooklyn: The Other Side of the Bridge. By Alice J. Hall. Photos by Robert W. Madden. 580-613, *May 1983*
Manhattan–Images of the City. By John J. Putman. Photos by Jay Maisel. 317-343, *Sept. 1981*
To Live in Harlem.... By Frank Hercules. Photos by LeRoy Woodson, Jr. 178-207, *Feb. 1977*
The Pious Ones. By Harvey Arden. Photos by Nathan Benn. Contents: The Hasidic Jews of Brooklyn. 276-298, *Aug. 1975*
The Fair Reopens (World's Fair, 1964-1965). Photos by James P. Blair. Text by Carolyn Bennett Patterson. 505-529, *Apr. 1965*
The World in New York City. By Peter T. White. 52-107, *July 1964*
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Central Park: Manhattan's Big Outdoors. By Stuart E. Jones. Photos by Bates Littlehales. 781-811, *Dec. 1960*
Staten Island Ferry, New York's Seagoing Bus. By John T. Cunningham and Jay Johnston. Photos by W. D. Vaughn. 833-843, *June 1959*
Immigrants Still Flock to Liberty's Land. By Albert W. Atwood. 708-724, *Nov. 1955*
Here's New York Harbor. By Stuart E. Jones. Photos by Robert F. Sisson and David S. Boyer. 773-813, *Dec. 1954*
In the Wilds of a City Parlor. By Paul A. Zahl. 645-672, *Nov. 1954*
New York Again Hails the Horse (National Horse Show). By Walter B. Devereux. 697-720, *Nov. 1954*
The Mohawks Scrape the Sky. By Robert L. Conly. Photos by B. Anthony Stewart. Contents: Brooklyn's steelworking Mohawk Indians. 133-142, *July 1952*
Long Island Outgrows the Country. By Howell Walker. Photos by B. Anthony Stewart. 279-326, *Mar. 1951*
The Romance of American Furs. By Wanda Burnett. 379-402, *Mar. 1948*
Shad in the Shadow of Skyscrapers. By Dudley B. Martin. Photos by Luis Marden. 359-376, *Mar. 1947*
Spin Your Globe to Long Island: Only Six States Have More People than the Insular Empire that Ranges from a World's Fair Through Potato Patches, Princely Estates, and Historic Shrines. By Frederick Simpich. 413-460, *Apr. 1939*
The Reaches of New York City. Included: Adjacent areas of Connecticut, New Jersey, and New York. *Apr. 1939*
Greater New York...Metropolis of Mankind. Aërial photo by Albert W. Stevens. Pictorial supplement. *Nov. 1933*
A Map of the Travels of George Washington. Included: Inset of New York and the lower Hudson. *Jan. 1932*
This Giant That Is New York. By Frederick Simpich. Included: Tempo and Color of a Great City. Photos by Clifton Adams and Edwin L. Wisherd. 517-583, *Nov. 1930*
New York–The Metropolis of Mankind. By William Joseph Showalter. 1-49, *July 1918*
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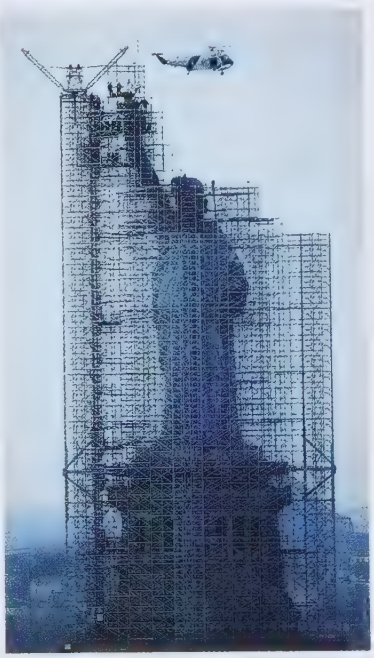

Scaffolding swathes the Statue of Liberty during renovation of the lady who greets visitors to New York City. JOHN P. FILO

NEW YORK AQUARIUM, Coney Island, New York:
Three Whales That Flew. By Carleton Ray. Photos by W. Robert Moore. 346-359, *Mar. 1962*

NEW YORK GULF:
Gomez and the New York Gulf. By L. D. Scisco. 371-373, *Aug. 1898*

NEW YORK HARBOR–The Golden Door. By Erla Zwingle. Photos by Bruce Davidson. 21-43, *July 1986*

NEW YORK STATE BARGE CANAL:
Drums to Dynamos on the Mohawk. By Frederick G. Vosburgh. Photos by B. Anthony Stewart. 67-110, *July 1947*
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NEW YORK STATE THRUWAY:
New York State's New Main Street. By Matt C. McDade. 567-618, *Nov. 1956*

NEW YORK ZOOLOGICAL PARK, New York:
Flight of the Platypuses. By David Fleay. 512-525, *Oct. 1958*
Zoo Animals Go to School. By Marion P. McCrane. Photos by W. E. Garrett. 694-706, *Nov. 1956*
Biggest Worm Farm Caters to Platypuses. By W. H. Nicholas. 269-280, *Feb. 1949*

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Field Station, Trinidad
Keeping House for Tropical Butterflies. By Jocelyn Crane. Photos by M. Woodbridge Williams. 193-217, *Aug. 1957*

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NEW ZEALAND:
The Captivating Kiwifruit. By Noel D. Vietmeyer. Photos by Jim Brandenburg. 683-688, *May 1987*
New Zealand: the Last Utopia? By Robert Paul Jordan. Photos by Kevin Fleming. 654-681, *May 1987*
Red Deer and Man. By T. H. Clutton-Brock. Photos by Jim Brandenburg. 538-555, *Oct. 1986*

Monstrous eye of the Coney Island Light Station scans New York Harbor, aided by Frank Schubert, in 1985 the nation's last civilian lighthouse keeper. BRUCE DAVIDSON, MAGNUM

Maoris: At Home in Two Worlds. By Yva Momatiuk and John Eastcott. 522-541, *Oct. 1984*

Maoris: Treasures of the Tradition. By Douglas Newton. Photos by Brian Brake. 542-553, *Oct. 1984*

Park at the Top of the World: Mount Everest National Park. By Rick Ridgeway. Photos by Nicholas deVore III. 696-725. Contents: New Zealand's contribution to the establishment of Sagarmatha National Park, Nepal–funding for five years; construction of buildings; providing advisers; assisting the Nepalese in devising a plan of management. Included: Preserving a Mountain Heritage. By Sir Edmund Hillary. 696-703, *June 1982*

New Zealand's High Country. By Yva Momatiuk and John Eastcott. 246-265, *Aug. 1978*

New Zealand's Milford Track: "Walk of a Lifetime." By Carolyn Bennett Patterson. Photos by Robert E. Gilka. 117-129, *Jan. 1978*

New Zealand's North Island: The Contented Land. By Charles McCarry. Photos by Bates Littlehales. 190-213, *Aug. 1974*

New Zealand's Bountiful South Island. By Peter Benchley. Photos by James L. Amos. 93-123, *Jan. 1972*

Captain Cook: The Man Who Mapped the Pacific. By Alan Villiers. Photos by Gordon W. Gahan. 297-349, *Sept. 1971*

In the Wake of Darwin's *Beagle*. By Alan Villiers. Photos by James L. Stanfield. 449-495, *Oct. 1969*

New Zealand's Cook Islands: Paradise in Search of a Future. By Maurice Shadbolt. Photos by William Albert Allard. 203-231, *Aug. 1967*

First Flight Across the Bottom of the World (Cape Town to Christchurch). By James R. Reedy. Photos by Otis Imboden. 454-464, *Mar. 1964*

New Zealand: Gift of the Sea. By Maurice Shadbolt. Photos by Brian Brake. 465-511, *Apr. 1962*

The Kiwi, New Zealand's Wonder Bird. By Ron J. Anderson. 395-398, *Sept. 1955*

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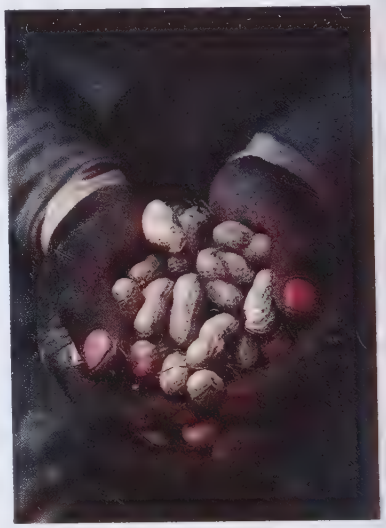

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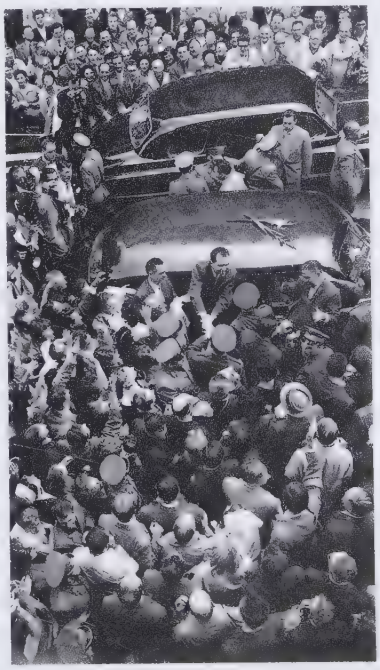

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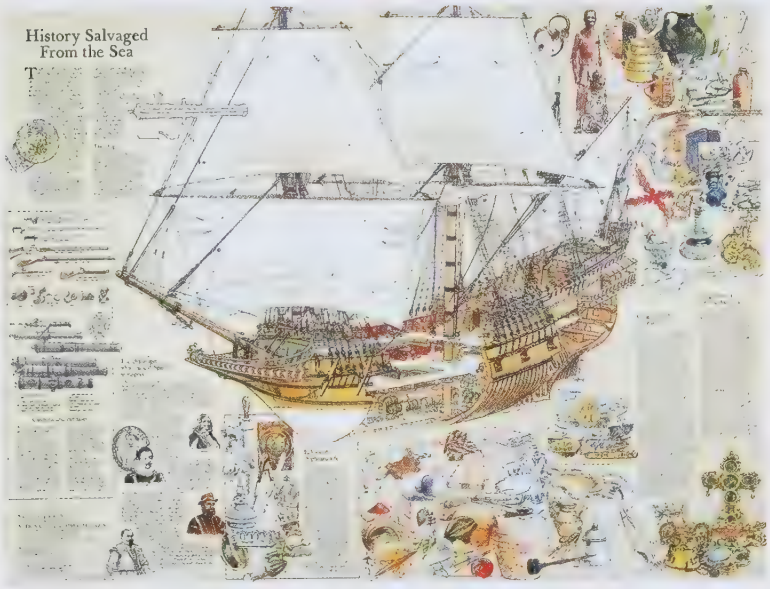

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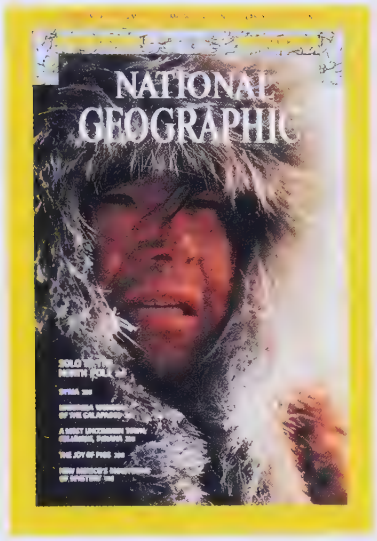

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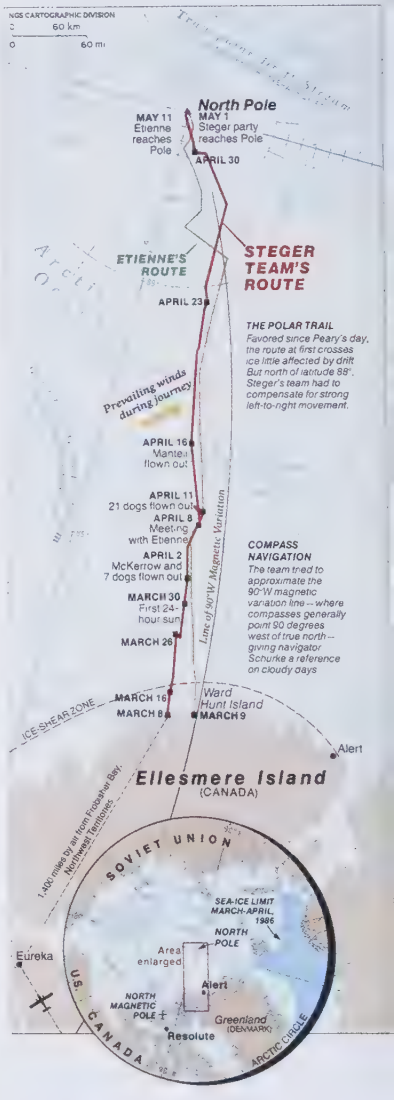

Similar paths led two expeditions to the North Pole in 1986: a six-person dogsled team and a solo skier.

For the first time since Peary's 1909 attempt, a 1986 expedition reached the North Pole by dogsled without resupplying. WILL STEGER

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Nansen's Polar Expedition. By A. W. Greely. 98-101, *Mar. 1896*
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Scotland, Ghosts, and Glory. By Rowe Findley. Photos by Peter Carmichael. 40-69, *July 1984*
Striking It Rich in the North Sea. By Rick Gore. Photos by Dick Durrance II. Included: Map showing five sectors of national rights over oil and gas reserves. 519-549, *Apr. 1977*
Oil, the Dwindling Treasure. By Noel Grove. Photos by Emory Kristof. 792-825, *June 1974*
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Massachusetts' North Shore: Harboring Old Ways. By Randall S. Peffer. Photos by Nathan Benn. 568-590, *Apr. 1979*

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The Pipeline: Alaska's Troubled Colossus. By Bryan Hodgson. Photos by Steve Raymer. Included: Diagram, Anatomy of the pipeline; map showing potential and producing oil and gas areas. 684-717, *Nov. 1976*
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Isles on the Edge of the Sea: Scotland's Outer Hebrides. By Kenneth MacLeish. Photos by Thomas Nebbia. 676-711, *May 1970*

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Air Rescue Behind Enemy Lines. By Howard Sochurek. 346-369, *Sept. 1968*

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Deaf Children Learn to Talk at Clarke School. By Lilian Grosvenor. Photos by Willard R. Culver. 379-397, *Mar. 1955*

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The Incredible Potato. By Robert E. Rhoades. Photos by Martin Rogers. Note: Potatoes were first introduced in New England in 1719 by Scotch-Irish immigrants. 668-694, *May 1982*

Close-up: U.S.A., The Northeast. Text on reverse. Included: New Jersey, New York, Pennsylvania. *Jan. 1978*
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Men, Moose, and Mink of Northwest Angle. By William H. Nicholas. Photos by J. Baylor Roberts. 265-284, *Aug. 1947*

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PYRAMIDS

Risking encounters with leopard seals, Adélie penguins take the plunge to feed in Antarctic waters.

JANNIK SCHOU

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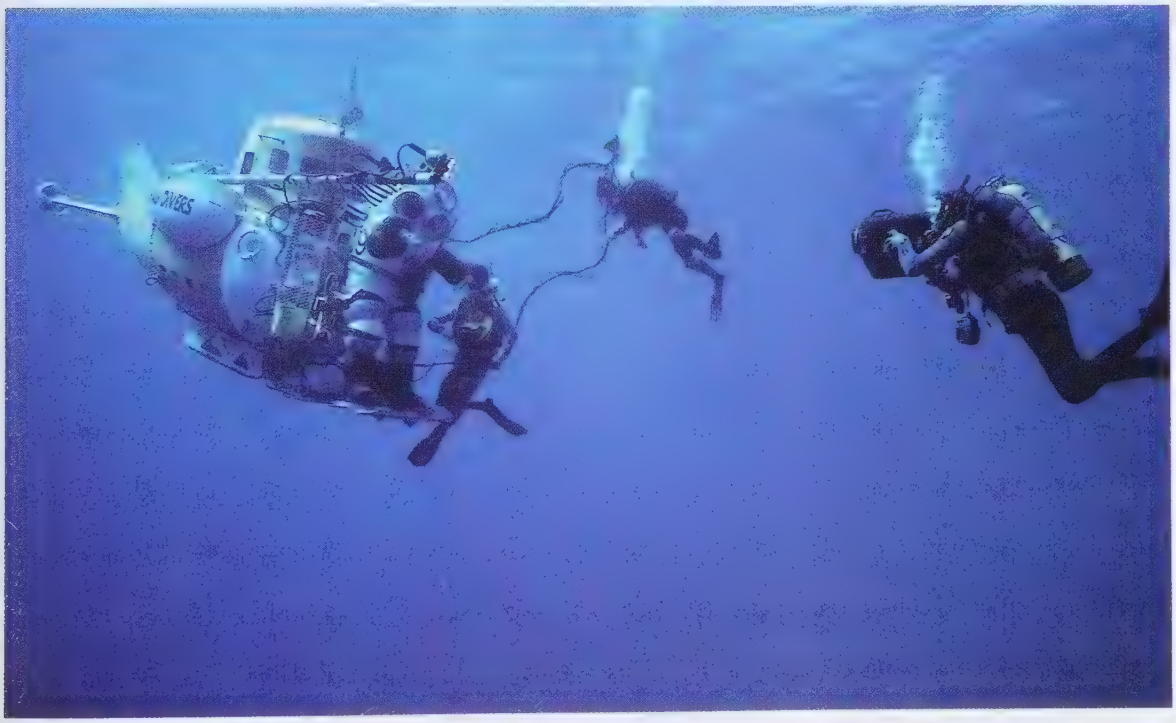

A space-age diving suit will allow marine biologist Sylvia Earle to explore the seafloor at 1,250 feet off Oahu, Hawaii. PETE ROMANO

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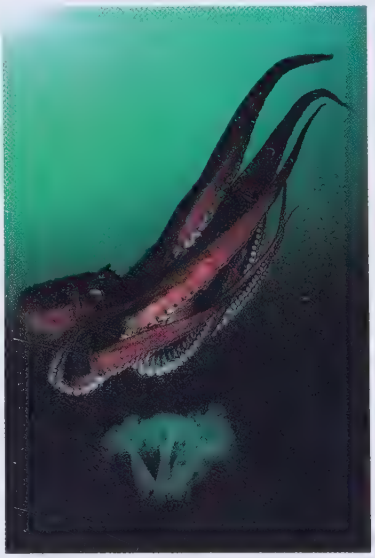

A giant octopus in British Columbia's Strait of Georgia propels itself by jetting water past its eight arms. DAVID DOUBILET

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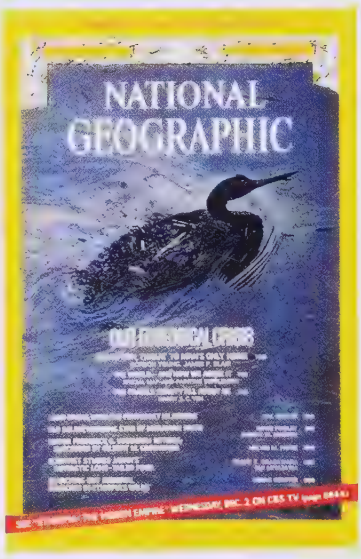

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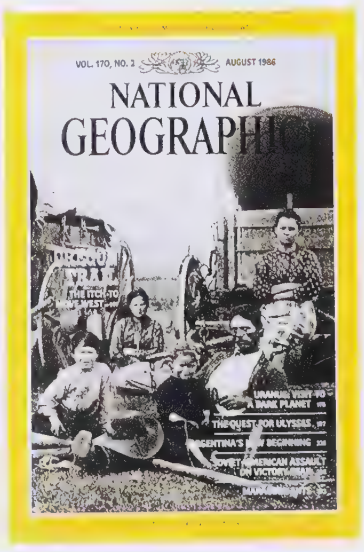

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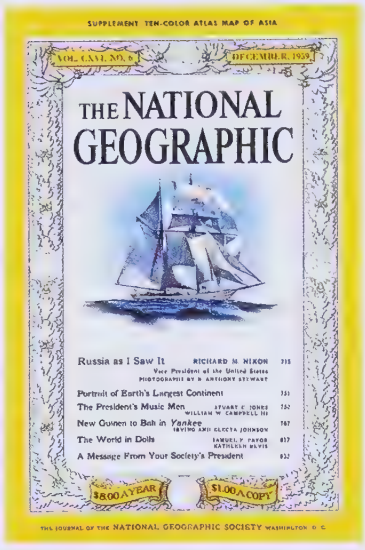
SUPPLEMENT TEN-COLOR ATLAS MAP OF ASIA
THE NATIONAL GEOGRAPHIC
Russia as I Saw It
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Time and Again in Burma. By Bryan Hodgson. Photos by James L. Stanfield. 90-121, *July 1984*

Pagan, on the Road to Mandalay. By W. E. Garrett. 343-365, *Mar. 1971*

The Five Thousand Temples of Pagān: Burma's Sacred City Is a Place of

Remnants of thousand-year-old Pagan, Burma's first imperial capital, include some 2,000 temples. JAMES L. STANFIELD, NGS

Enchantment in the Midst of Ruins. By William H. Roberts. 445-454, *Oct. 1931*
Untoured Burma. By Charles H. Bartlett. 835-853, *July 1913*

PAGE, JAKE: *Author*
Inside the Sacred Hopi Homeland. Photos by Susanne Page. 607-629, *Nov. 1982*

PAGE, JAMES: *Author*
The Sailing Ship and the Panama Canal. 167-176, *Apr. 1904*
Reports of Vessels as to the Range of Volcanic Dust. 299-301, *July 1902*
Ocean Currents. 135-142, *Apr. 1902*
The Drift of Floating Bottles in the Pacific Ocean. 337-339, *Sept. 1901*

PAGE, SUSANNE: *Photographer*
Inside the Sacred Hopi Homeland. By Jake Page. 607-629, *Nov. 1982*

The **PAGEANT** of Jerusalem: The Capital of the Land of Three Great Faiths Is Still the Holy City for Christian, Moslem, and Jew. By Edward Keith-Roach. 635-681, *Dec. 1927*

The **PAGEANT** of Rajasthan. By Raghubir Singh. 219-243, *Feb. 1977*

PAGEANTRY of the Siamese Stage. By D. Sonakul. Photos by W. Robert Moore. 201-212, *Feb. 1947*

PAGES from the Floral Life of America. Paintings by Mary E. Eaton. 44-75, *July 1925*

PAGO PAGO, Samoa:
Samoa–South Sea Outpost of the U. S. Navy. Photos by Truman Bailey. 615-630, *May 1941*
Sailing the Seven Seas in the Interest of Science: Adventures Through 157,000 Miles of Storm and Calm, from Arctic to Antarctic and Around the World, in the Non-magnetic Yacht "Carnegie." By J. P. Ault. 631-690, *Dec. 1922*
America's South Sea Soldiers. By Lorena MacIntyre Quinn. 267-274, *Sept. 1919*

PAGODAS:
Pagan, on the Road to Mandalay. By W. E. Garrett. 343-365, *Mar. 1971*

PAHLAVI, MOHAMMAD REZA. *See* Mohammad Reza Pahlavi

PAHUATLÁN, Mexico:
The Mexican Indian Flying Pole Dance. By Helga Larsen. 387-400, *Mar. 1937*

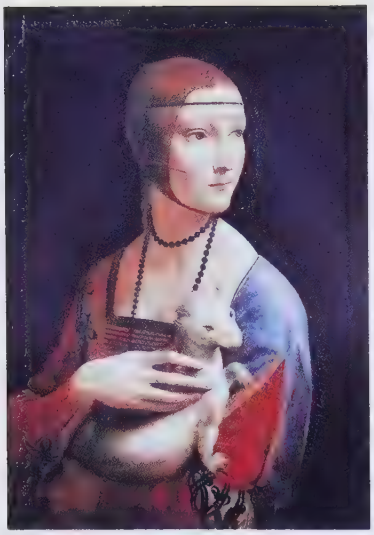
PAIGE, SIDNEY: *Author*
A Growing Camp in the Tanana Gold Fields, Alaska. 104-111, *Mar. 1905*

PAINE, THOMAS:
Firebrands of the Revolution. By Eric F. Goldman. Photos by George F. Mobley. 2-27, *July 1974*

PAINE, THOMAS O.: *Author*
Next Steps in Space. 793-797, *Dec. 1969*

PAINTERS. *See* Artists

PAINTING:
Remington, the Man and the Myth. By Louise E. Levathes. Photos by Chris Johns. 200-231, *Aug. 1988*
C. M. Russell, Cowboy Artist. By Bart McDowell. Photos by Sam Abell. 60-95, *Jan. 1986*
Restoration Reveals the "Last Supper." By Carlo Bertelli. Photos by Victor R. Boswell, Jr. 664-685, *Nov. 1983*
The World of Martin Luther. By Merle Severy. Photos by James L. Amos. 418-463, *Oct. 1983*
The Lost Fleet of Kublai Khan. By Torao Mozai. Photos by Koji Nakamura. Paintings by Issho Yada. 634-649, *Nov. 1982*
Toledo–El Greco's Spain Lives On. By Louise E. Levathes. Photos by James P. Blair. Included: The Genius of El Greco. Introduction by J. Carter Brown. 726-753, *June 1982*
Belgium: One Nation Divisible. By James Cerruti. Photos by Martin Rogers. Included: Flemish techniques. 314-341, *Mar. 1979*
Regal Treasures From a Macedonian Tomb. By Manolis Andronicos. Photos by Spyros Tsavdaroglou. 55-77, *July 1978*
Minoans and Mycenaeans: Greece's Brilliant Bronze Age. By Joseph Judge. Photos by Gordon W. Gahan. Paintings by Lloyd K. Townsend. 142-185. *Feb. 1978*
Leonardo da Vinci: A Man for All



Painting of a woman holding an ermine reflects Leonardo da Vinci's mastery.
CZARTORYSKI MUSEUM, KRAKOW, POLAND

Ages. By Kenneth MacLeish. Photos by James L. Amos. 296-329, *Sept. 1977*
Audubon "On the Wing." By David Jeffery. Photos by Bates Littlehales. 149-177, *Feb. 1977*
The Maya. 729-811. I. Children of Time. By Howard La Fay. Photos by David Alan Harvey. 729-767; II. Riddle of the Glyphs. By George E. Stuart. Photos by Otis Imboden. 768-791; III. Resurrecting the Grandeur of Tikal. By William R. Coe. 792-798; IV. A Traveler's Tale of Ancient Tikal. Paintings by Peter Spier. Text by Alice J. Hall. 799-811, *Dec. 1975*
Florence Rises From the Flood. By Joseph Judge. 1-43, *July 1967*
In Quest of Beauty. Text by Paul Mellon. 372-385, *Mar. 1967*
So Long, St. Louis, We're Heading West. By William C. Everhart. 643-669, *Nov. 1965*
Mount Sinai's Holy Treasures (St. Catherine's Monastery). By Kurt Weitzmann. Photos by Fred Anderegg. 109-127, *Jan. 1964*
Escorting Mona Lisa to America. By Edward T. Folliard. 838-847, *June 1963*
Ships Through the Ages: A Saga of the Sea. By Alan Villiers. 494-545, *Apr. 1963*
Early America Through the Eyes of Her Native Artists. By Hereward Lester Cooke, Jr. 356-389, *Sept. 1962*
Last Moments of the Pompeians. By Amedeo Maiuri. Photos by Lee E. Battaglia. Paintings by Peter V. Bianchi. 651-669, *Nov. 1961*
Great Masters of a Brave Era in Art. By Hereward Lester Cooke, Jr. 661-697, *May 1961*
Periscope on the Etruscan Past. By Carlo M. Lerici. 337-350, *Sept. 1959*
Children's Art Around the World. By Newman Bumstead. 365-387, *Mar. 1957*
Roman Life in 1,600-year-old Color Pictures. By Gino Vinicio Gentili. Photos by Duncan Edwards. 211-229, *Feb. 1957*
Fresh Treasures from Egypt's Ancient Sands. By Jefferson Caffery. Photos by David S. Boyer. 611-650, *Nov. 1955*
America's First Painters: Indians. By Dorothy Dunn. 349-377, *Mar. 1955*
U. S. Capitol, Citadel of Democracy. By Lonnelle Aikman. 143-192, *Aug. 1952*
American Processional: History on Canvas. By John and Blanche Leeper. 173-212, *Feb. 1951*
The British Way: Great Britain's Major Gifts to Freedom, Democratic Government, Science, and Society. By Sir Evelyn Wrench. 421-541, *Apr. 1949*
Our Search for British Paintings. By Franklin L. Fisher. 543-550, *Apr. 1949*
Masterpieces on Tour. By Harry A. McBride. 717-750, *Dec. 1948*
Artists Look at Pennsylvania. By John Oliver La Gorce. 37-56, *July 1948*
Democracy's Royal Palace (Westminster). Photos by B. Anthony Stewart. 233-248, *Aug. 1946*
Europe's Looted Art. By John Walker. 39-52, *Jan. 1946*
Old Masters in a New National Gallery. By Ruth Q. McBride. Contents: Mellon and Kress Collections. 1-50, *July 1940*
How Warwick (Castle) Was Photographed in Color. By Maynard Owen Williams. 83-93, *July 1936*
Faces and Fashions of Asia's Changeless Tribes. Paintings and drawings by Alexandre Iacovleff. 21-36, *Jan. 1936*
Pioneer Gaucho Days. Paintings by Cesáreo Bernaldo de Quirós. 453-460, *Oct. 1933*

Presidential Portraits
Profiles of the Presidents. By Frank Freidel. Included: White House portraits; American paintings and engravings.
Part V. The Atomic Age: Its Problems and Promises. Contents: Franklin D. Roosevelt, Harry S. Truman, Dwight D. Eisenhower, John F. Kennedy, Lyndon B. Johnson. 66-119, *Jan. 1966*
Part IV. America Enters the Modern Era. Contents: Theodore Roosevelt, William Howard Taft, Woodrow Wilson, Warren G. Harding, Calvin Coolidge, Herbert Hoover. 537-577, *Oct. 1965*
Part III. The American Giant Comes of Age. Contents: Abraham Lincoln, Andrew Johnson, Ulysses S. Grant, Rutherford B. Hayes, James A. Garfield, Chester A. Arthur, Grover Cleveland, Benjamin Harrison, William McKinley. 660-711, *May 1965*
Part II. A Restless Nation Moves West. Contents: Andrew Jackson, Martin Van Buren, William Henry Harrison, John Tyler, James K. Polk, Zachary Taylor, Millard Fillmore, Franklin Pierce, James Buchanan. 80-121, *Jan. 1965*
Part I. The Presidency and How It Grew. Contents: George Washington, John Adams, Thomas Jefferson, James Madison, James Monroe, John Quincy Adams. 642-687, *Nov. 1964*
See also Rock Art; *and listing under* Art Galleries

PAINTING History in the Pacific. Paintings by William F. Draper. 408-424, *Oct. 1944*

PAINTING SUPPLEMENTS:
"Journey Into the Universe Through Time and Space," by Lloyd K.

A section of da Vinci's "Last Supper" shows the patch-by-patch restoration of the masterpiece after centuries of deterioration and abuse. VICTOR R. BOSWELL, JR., NGS

Townsend. Sky Survey photos on reverse. *June 1983*
"The Solar System," by Lloyd K. Townsend. NASA photo of Saturn on reverse. *July 1981*
"Bird Migration in the Americas," by Arthur Singer. Map on reverse. *Aug. 1979*
"Australia; Land of Living Fossils," by Roy Andersen. Map on reverse. *Feb. 1979*
"History Salvaged From the Sea," by Richard Schlecht. Map on reverse. *Dec. 1977*
"Whales of the World." Map on reverse. *Dec. 1976*
"Teammates in Mankind's Greatest Adventure" (Apollo Astronauts). *Sept. 1973*
"The Dusty Face of Mars." Map on reverse. *Feb. 1973*
"Ice Age Mammals of the Alaskan Tundra." Map of Canada on reverse. *Mar. 1972*
"How Man Pollutes His World." Map on reverse. *Dec. 1970*
"Mayflower II." *Nov. 1957*
"The Adoration of the Magi," tondo by Fra Angelico and Fra Filippo Lippi. *Jan. 1952*
Cathedrals of England. Dry-point engravings by Norman Wilkinson. 745-760, 762, *Dec. 1939*
Ships of the Centuries. Etchings by Norman Wilkinson. 65-80, *Jan. 1938*
The "Map of Discovery" (Western Hemisphere). Painting by N. C. Wyeth. Contents: Part of the Romance of Discovery series. *Jan. 1929*
The "Map of Discovery" (Eastern Hemisphere). Painting by N. C. Wyeth. Contents: Part of the Romance of Discovery series. *Nov. 1928*
Fate Directs the Faltering Footsteps of Columbus. Painting by Alfred Dehodencq, Paris. *Sept. 1928*
The Caravels of Columbus. Painting by N. C. Wyeth. Contents: Part of the Romance of Discovery series. *July 1928*
Through Pathless Skies to the North Pole (Commander Byrd at the North Pole). Painting by N. C. Wyeth. Contents: Part of the Romance of Discovery series. *May 1928*
The Discoverer. Painting by N. C. Wyeth. Note: This is the first painting of the Romance of Discovery series. *Mar. 1928*
Vasco da Gama at the Court of the Zamorin of Calicut. Painting by José Velloso Salgado, Sociedade de Geographia de Lisboa. *Nov. 1927*
Boyhood of Sir Walter Raleigh. Painting by Sir John Millais, Tate Gallery, London. *May 1926*
The Alaska Brown Bear: The Largest Carnivorous Animal Extant. *Nov. 1916*
The Mall, Washington, D. C. Contents: Plan. *Mar. 1915*
The Ultimate Washington (Plan laid out by the Commission of 1901 for the National Capital). Panorama. *Mar. 1915*
Bird's-Eye View of the Panama Canal. Panorama. *Feb. 1912*

Training in bordering Pakistan in 1985, an Afghan boy wields a wooden version of the Soviet-made AK-47. STEVE MCCURRY

PAINTING the Army on Maneuvers. By Arthur Beaumont. Paintings by author. 601-602, *Nov. 1942*

PAINTING the Terrier Series. By Edward Herbert Miner. 273-274, *Feb. 1936*

PAKISTAN:

Baltistan–The 20th Century Comes to Shangri-la. By Galen Rowell. Photos by the author and Barbara Cushman Rowell. Included: War among the peaks. 526-550, *Oct. 1987*
Along Afghanistan's War-torn Frontier. By Debra Denker. Photos by Steve McCurry. 772-797, *June 1985*
The Poppy. By Peter T. White. Photos by Steve Raymer. 143-189, *Feb. 1985*
South Asia, with Afghanistan and Burma; Peoples of South Asia, Dec. 1984
By Rail Across the Indian Subcontinent. By Paul Theroux. Photos by Steve McCurry. 696-743, *June 1984*
Pakistan's Kalash: People of Fire and Fervor. By Debra Denker. Photos by Steve McCurry. 458-473, *Oct. 1981*
Pakistan Under Pressure. By William S. Ellis. Photos by James L. Stanfield. 668-701, *May 1981*
Americans Climb K2. 641-649. Photos by members of the expedition. I. The Ultimate Challenge. By James W. Whittaker. 624-639; II. On to the Summit. By James Wickwire. 623-649, *May 1979*
An Eye for an Eye: Pakistan's Wild Frontier. By Mike W. Edwards. Photos by J. Bruce Baumann. 111-139, *Jan. 1977*
Imperiled Phantom of Asian Peaks: First Photographs of Snow Leopards in the Wild. By George B. Schaller. NGS research grant. 702-707, *Nov. 1971*
In the Footsteps of Alexander the Great. By Helen and Frank Schreider. Paintings by Tom Lovell. 1-65, *Jan. 1968*
Pakistan: Problems of a Two-part Land. By Bern Keating. Photos by Albert Moldvay. 1-47, *Jan. 1967*
When the President Goes Abroad (Eisenhower Tour). By Gilbert M. Grosvenor. 588-649, *May 1960*
Sky Road East. By Tay and Lowell Thomas, Jr. 71-112, *Jan. 1960*
Troubled Waters East of Suez. By Ernest M. Eller. 483-522, *Apr. 1954*
Pakistan, New Nation in an Old Land. By Jean and Franc Shor. 637-678, *Nov. 1952*
"Around the World in Eighty Days." By Newman Bumstead. Included: Karachi, Khyber Pass, Kohat Pass, Peshawar, Swat (State). 705-750, *Dec. 1951*
India Mosaic. By Peter Muir and Frances Muir. Included: India at Work and Play. Photos by authors and Maynard Owen Williams. 443-470, *Apr. 1946*
South of Khyber Pass. By Maynard Owen Williams. 471-500, *Apr. 1946*
India–Yesterday, Today, and Tomorrow. By Lord Halifax. 385-408, *Oct. 1943*
The British Commonwealth of Nations: "Organized Freedom" Around the World. By Eric Underwood. 485-524, *Apr. 1943*
Flying the World: In a Homemade Airplane the Author and Her Husband Enjoy 16,000 Miles of Adventurous Flight Across Europe, Asia, and America. By Gladys M. Day. 655-690, *June 1932*
Through the Heart of Hindustan: A Teeming Highway Extending for Fifteen Hundred Miles, from the Khyber Pass to Calcutta. By Maynard Owen Williams. 433-467, *Nov. 1921*
Among the Great Himalayan Glaciers. 405-406, *Nov. 1902*
Geographic Progress of Civilization. Annual Address by the President, Gardiner G. Hubbard. 1-22, *Feb. 14, 1894*
See also Hunza

PAKISTAN, East:

East Pakistan Drives Back the Jungle. By Jean and Franc Shor. 399-426, *Mar. 1955*
See also present name, Bangladesh

The **PALACE** of Versailles, Its Park and the Trianons. By Franklin L. Fisher. 49-62, *Jan. 1925*

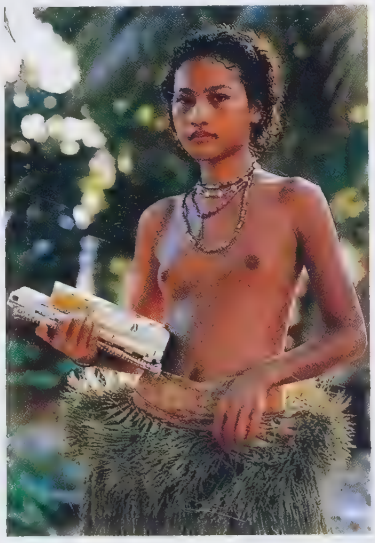
PALACE OF WESTMINSTER (Parliament), London:

The Palace That Became Parliament. By Patrick Cormack. Photos by Adam Woolfitt. Included: Royal Pomp Before Debate: In Centuries-old Ceremonial, the Queen Opens Parliament. 728-757, *Dec. 1986*
Queen Elizabeth Opens Parliament. By W. E. Roscher. Photos by Robert B. Goodman. 699-707, *Nov. 1961*
Yanks at Westminster. By Leonard David Gammans. 223-252, *Aug. 1946*

PALACES:
Palaces and Peasants in Rome's Old Colony. Photos by Wilhelm Tobien. 439-446, *Apr. 1934*
Exploring the Secrets of Persepolis. By Charles Breasted. 381-420, *Oct. 1933*
Streets and Palaces of Colorful India. 60-85, *July 1926*
Chichen Itzá, an Ancient American Mecca: Recent Excavations in Yucatan Are Bringing to Light the Temples, Palaces, and Pyramids of America's Most Holy Native City. By Sylvanus Griswold Morley. 63-95, *Jan. 1925*
See also Castles; Chateaux; Potala; Versailles; *and* Palace of Westminster

PALARIS (Ships):
Seafarers of South Celebes. By G.E.P. Collins. 53-78, *Jan. 1945*

PALAU, Republic of:
In the Far Pacific: At the Birth of Nations. By Carolyn Bennett Patterson. Photos by David Hiser and Melinda Berge. Included: Mariana Islands, Marshall Islands, Kosrae, Pohnpei, Truk, Yap, Palau. 460-499, *Oct. 1986*
Strange World of Palau's Salt Lakes. By William M. Hamner. Photos by David Doubilet. 264-282, *Feb. 1982*
Dazzling Corals of Palau. By Thomas O'Neill. Photos by Douglas Faulkner. 136-150, *July 1978*
South from Saipan. By W. Robert Moore. 441-474, *Apr. 1945*
Painting History in the Pacific. Paintings by William F. Draper. 409-424, *Oct. 1944*
Hidden Key to the Pacific: Piercing the Web of Secrecy Which Long Has Veiled Japanese Bases in the Mandated Islands. By Willard Price. 759-785, *June 1942*
Yap and Other Pacific Islands Under Japanese Mandate. By Junius B. Wood. 591-627, *Dec. 1921*



In the far Pacific a young student on Mogmog, an island of Yap state, heads for class in a grass skirt. DAVID HISER

PALEN, COLE:
World War I Aircraft Fly Again in Rhinebeck's Rickety Rendezvous. By Harvey Arden. Photos by Howard Sochurek. 578-587, *Oct. 1970*

PALENQUE (Ruins), Mexico:
Finding Jewels of Jade in a Mexican Swamp. By Matthew W. and Marion Stirling. 635-661, *Nov. 1942*

PALEO-INDIANS:
Clovis Cache Found: Weapons of Ancient Americans. By Peter J. Mehringer, Jr. Photos by Warren Morgan. 500-503, *Oct. 1988*
Mysteries of the Bog. By Louise E. Levathes. Photos by Fred Bavendam. Included: Peat holds clues to early American life. 397-420, *Mar. 1987*
The Southwest, The Making of America series. Included: 12,000 Years of History. *Nov. 1982*
Man's Eighty Centuries in Veracruz. By S. Jeffrey K. Wilkerson. Photos by David Hiser. Paintings by Richard Schlecht. NGS research grant. 203-231, *Aug. 1980*
The Search for the First Americans. By Thomas Y. Canby. Photos by Kerby Smith. Paintings by Roy Andersen. 330-363, *Sept. 1979*
Bison Kill By Ice Age Hunters. By Dennis Stanford. NGS research grant. 114-121, *Jan. 1979*
Probing the Mystery of the Medicine Wheels. By John A. Eddy. Photos by Thomas E. Hooper. NGS research grant. 140-146, *Jan. 1977*
Wyoming Muck Tells of Battle: Ice Age Man vs. Mammoth. By Cynthia Irwin, Henry Irwin, and George Agogino. NGS research grant. 828-837, *June 1962*
Russell Cave: New Light on Stone Age Life. By Carl F. Miller. NGS research grant. 427-437, *Mar. 1958*
Life 8,000 Years Ago Uncovered in an Alabama Cave. By Carl F. Miller. NGS research grant. 542-558, *Oct. 1956*
Ice Age Man, the First American. By Thomas R. Henry. Paintings by Andre Durenceau. 781-806, *Dec. 1955*

PALEOLITHIC MAN. *See* Ice Age Man

PALEONTOLOGY:
Fossils: Annals of Life Written in Rock. By James L. Amos and David Jeffery. 182-191, *Aug. 1985*
Giants from the Past: The Age of Mammals. By Joseph H. Bailey. Juvenile. 104 pages. *1983*
Ancient Ashfall Creates a Pompeii of Prehistoric Animals. By Michael R. Voorhies. Photos by Annie Griffiths. Paintings by Jay Matternes. NGS research grant. 66-75, *Jan. 1981*
A New Look at Dinosaurs. By John H. Ostrom. Paintings by Roy Andersen. NGS research grant. 152-185, *Aug. 1978*
Re-creating a Vanished World. By Russell D. Guthrie. 294-301, *Mar. 1972*
Adventures in the Search for Man. By Louis S. B. Leakey. Photos by Hugo van Lawick. Included: *Kenyapithecus wickeri; and* fossil remains of a giant rhinoceros, giant baboon, and antelope. NGS research grant. 132-152, *Jan. 1963*
A Visit to the Living Ice Age. By Rutherford Platt. 525-545, *Apr. 1957*
Fossils Lift the Veil of Time. By Harry S. Ladd and Roland W. Brown. 363-386, *Mar. 1956*
Big Game Hunting in the Land of Long Ago (South Dakota). By Joseph P. Connolly and James D. Bump. NGS research grant. 589-605, *May 1947*
Parade of Life Through the Ages: Records in Rocks Reveal a Strange Procession of Prehistoric Creatures, from Jellyfish to Dinosaurs, Giant Sloths, Saber-toothed Tigers, and Primitive Man. By Charles R. Knight. Paintings by author. Contents: American Mastodon, Archaeopteryx, Arsinoitherium, Ceratosaurus, Cladoselache, Cro-Magnon Man, Dimetrodon, Dinichthys, Diplodocus, Eohippus, Eryops, Eurypterid, Folsom Man, Glyptodon, Hyaenodon, Lake Dwellers, Macrauchenia, Megaceros, Megatherium, Moa, Mosasaurus, Naosaurus, Neanderthal Man, Parasaurolophus, Protoceratops, Pteranodon, Pterodactyl, Saber-toothed Tiger, Stegosaurus, Styracosaurus, Titanotherium, Toxodon, *Tyrannosaurus rex,* Uintatherium, Woolly Mammoth. 141-184, *Feb. 1942*
"Compleat Angler" Fishes for Fossils. By Imogene Powell. 251-258, *Aug. 1934*
Explorations in the Gobi Desert. By Roy Chapman Andrews. 653-716, *June 1933*
Hunting Big Game of Other Days: A Boating Expedition in Search of

Paleo-Indian hunters fashioned these Clovis spearpoints found in Washington State. WARREN MORGAN

Fossils in Alberta, Canada. By Barnum Brown. 407-429, *May 1919*
The Larger North American Mammals. By E. W. Nelson. Paintings by Louis Agassiz Fuertes. Included: Pictorial supplement. 385-472, *Nov. 1916*
Reptiles of All Lands. By Raymond L. Ditmars. Contents: Brontosaurus, Diplodocus, Stegosaurus. 601-633, *July 1911*
Our Coal Lands. By Guy Elliott Mitchell. 446-451, *May 1910*
A Strange and Remarkable Beast (Mammoth). 620, *Sept. 1907*
Extinct Reptiles Found in Nodules. By H. A. Largelamb. (Alexander Graham Bell). 170-173, *Mar. 1906*
The Wyoming Fossil Fields Expedition of July, 1899. By Wilbur C. Knight. 449-465, *Dec. 1900*
Report on Fossil Plants (Mount St. Elias Expedition). By Lester F. Ward. 199-200, *May 29, 1891*
See also Aepyornis; Brontosaurs; *and* American Museum of Natural History; Dinosaur National Monument; *and* Australopithecines; Hominids; Man, Prehistoric; Paleo-Indians

PALERMO, Sicily:
Sicily, Where All the Songs Are Sad. By Howard La Fay. Photos by Jonathan Blair. 407-436, *Mar. 1976*
Sicily Again in the Path of War. By Maynard Owen Williams. 307-320, *Sept. 1943*
Sicily, the Battle-Field of Nations and of Nature. By Mrs. George C. Bosson, Jr. 97-118, *Jan. 1909*

PALESTINE:
Palestine Today. By Francis Chase, Jr. 501-516, *Oct. 1946*
American Fighters Visit Bible Lands. By Maynard Owen Williams. 311-340, *Mar. 1946*
The Geography of the Jordan. By Nelson Glueck. 719-744, *Dec. 1944*
On the Trail of King Solomon's Mines: The Bible, in Addition to Its Spiritual Values, Continues to Prove a Rich Geography and Guide to Exploration of the Holy Land. By Nelson Glueck. 233-256, *Feb. 1944*
Bombs over Bible Lands. By Frederick Simpich and W. Robert Moore. 141-180, *Aug. 1941*
Canoeing Down the River Jordan: Voyagers in Rubber Boats Find the Bible Stream Little Tamed Today as It Plunges to the Dead Sea Over the Earth's Lowest River Bed. By John D. Whiting. 781-808, *Dec. 1940*
Change Comes to Bible Lands. By Frederick Simpich. 695-750, *Dec. 1938*
Changing Palestine. By Edward Keith-Roach. 493-527, *Apr. 1934*
The Road of the Crusaders: A Historian Follows the Steps of Richard the Lion Heart and Other Knights of the Cross Over the "Via Dei." By Harold Lamb. 645-693, *Dec. 1933*
Crusader Castles of the Near East. By William H. Hall. 369-390, *Mar. 1931*
Bethlehem and the Christmas Story. By John D. Whiting. 699-735, *Dec. 1929*
Skirting the Shores of Sunrise: Seeking and Finding "The Levant" in a Journey by Steamer, Motor-Car, and Train from Constantinople to Port Said. By Melville Chater. 649-728, *Dec. 1926*
Among the Bethlehem Shepherds: A Visit to the Valley Which David Probably Recalled When He Wrote the Twenty-third Psalm. By John D. Whiting. 729-753, *Dec. 1926*
Flying Over Egypt, Sinai, and Palestine: Looking Down Upon the Holy Land During an Air Journey of Two and a Half Hours from Cairo to Jerusalem. By P.R.C. Groves and J. R. McCrindle. 313-355, *Sept. 1926*
The Last Israelitish Blood Sacrifice: How the Vanishing Samaritans Celebrate the Passover on Sacred Mount Gerizim. By John D. Whiting. 1-46, *Jan. 1920*
An Old Jewel in the Proper Setting: An Eyewitness's Account of the Reconquest of the Holy Land by Twentieth Century Crusaders. By Charles W. Whitehair. 325-344, *Oct. 1918*
Jerusalem's Locust Plague: Being a Description of the Recent Locust Influx into Palestine, and Comparing Same with Ancient Locust Invasions as Narrated in the Old World's History Book, the Bible. By John D. Whiting. 511-550, *Dec. 1915*
Impressions of Palestine. By James Bryce. 293-317, *Mar. 1915*
Village Life in the Holy Land. By John D. Whiting. 249-314, *Mar. 1914*
Palestine. Photos by the American Colony, Jerusalem. 265-313, *Mar. 1914*
See also Holy Land; Israel; Jerusalem; Jordan

PALESTINE LIBERATION ORGANIZATION (PLO):
Beirut–Up From the Rubble. By William S. Ellis. Photos by Steve McCurry. 262-286, *Feb. 1983*

Clutching prayer beads, a patriarch of Bethlehem dispenses wisdom to passersby from his window in a land called Palestine in 1929. AMERICAN COLONY PHOTOGRAPHERS

Tragedy strikes during the Palio—an annual race in Siena, Italy—as horses go down rounding a sharp turn. One prize gelding had to be destroyed. O. LOUIS MAZZATENTA, NGS

PALESTINIAN REFUGEES:
Jordan: Kingdom in the Middle. By Thomas J. Abercrombie. Photos by Jodi Cobb. 236-268, *Feb. 1984*
Beirut–Up From the Rubble. By William S. Ellis. Photos by Steve McCurry. 262-286, *Feb. 1983*

A **PALETTE** from Spain. By W. Langdon Kihn. 407-440, *Mar. 1936*

PALIO (Horse Race), Siena, Italy:
Palio, Siena's Centuries-Old 90-second Horse Race. Photos by O. Louis Mazzatenta. 745-749, *June 1988*
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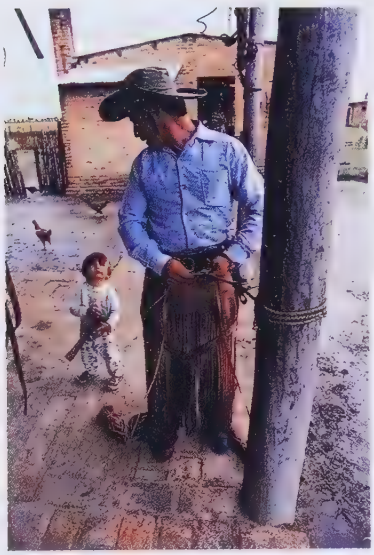

A ranch foreman in Paraguay's Chaco region greets his son while braiding a leather lasso. O. LOUIS MAZZATENTA, NGS

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Riding down the Champs Elysées in September 1944, a U.S. soldier reads the first Paris edition of the* Stars and Stripes *newspaper of World War II. U.S. ARMY SIGNAL CORPS, OFFICIAL

His Gallic expression captured by the photographer, Quebec tobacco farmer Gérard Ricard speaks French, as do a quarter of his fellow Canadians. WINFIELD PARKS, NGS

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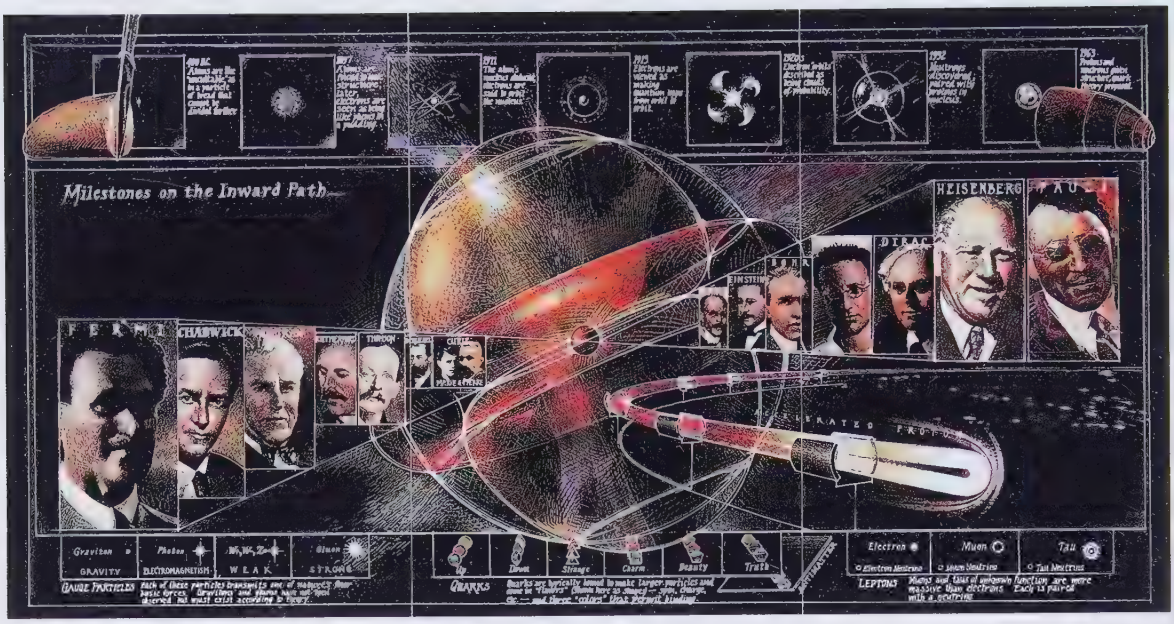

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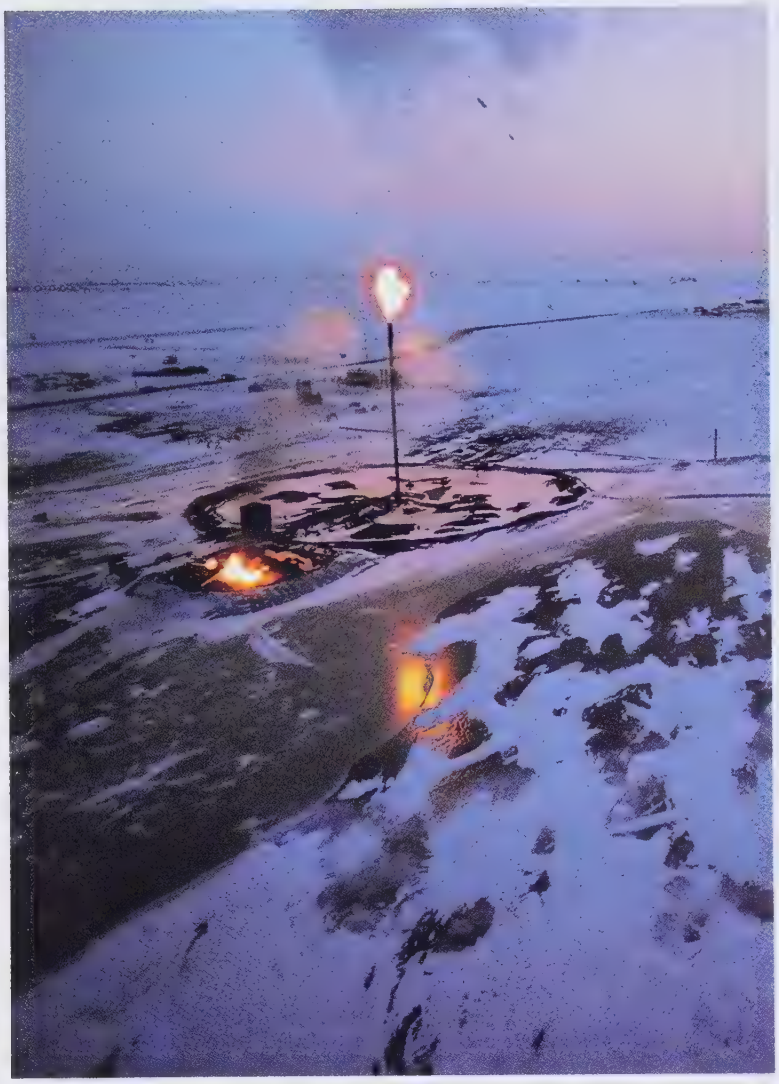

The 800-mile trans-Alaska pipeline opened in 1977 to carry oil from north coast Prudhoe Bay, here lit by a gas flare, south to the ice-free port of Valdez. STEVE RAYMER, NGS

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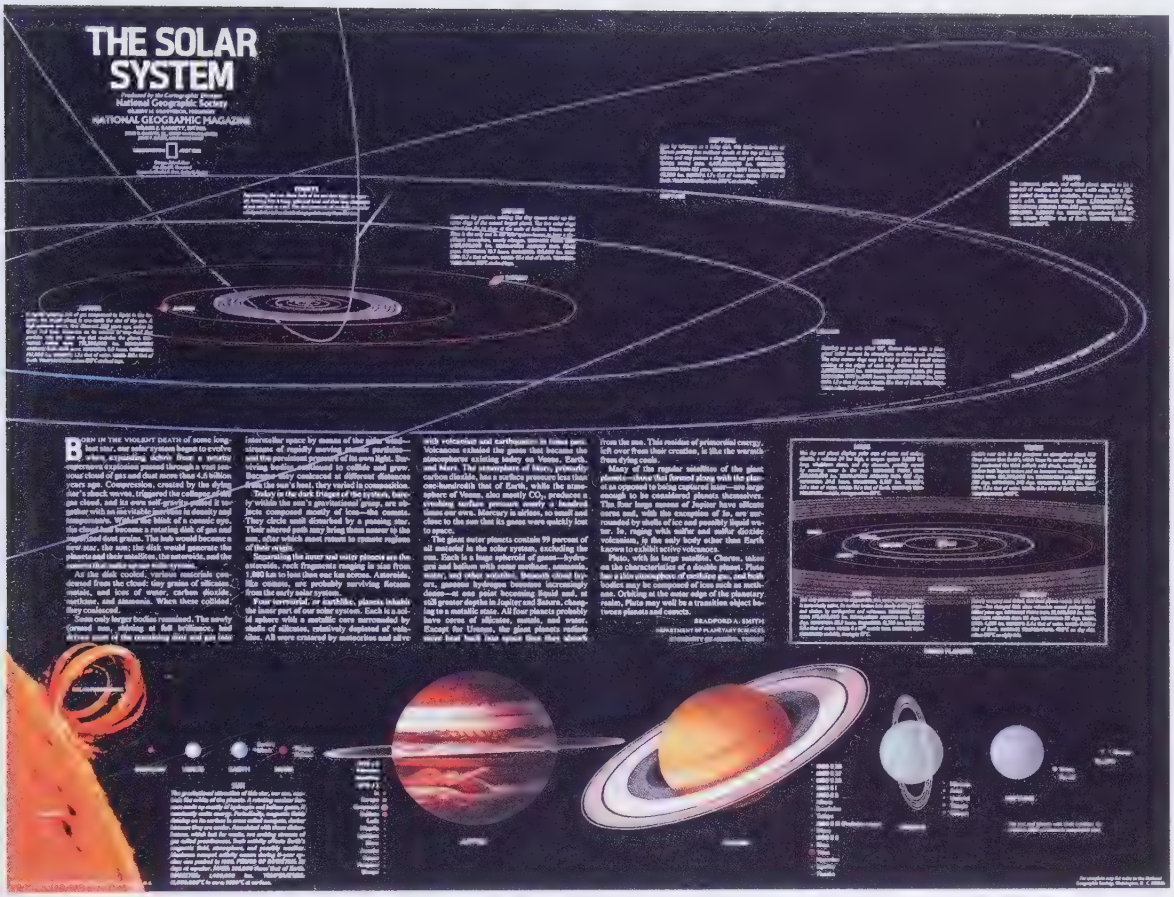

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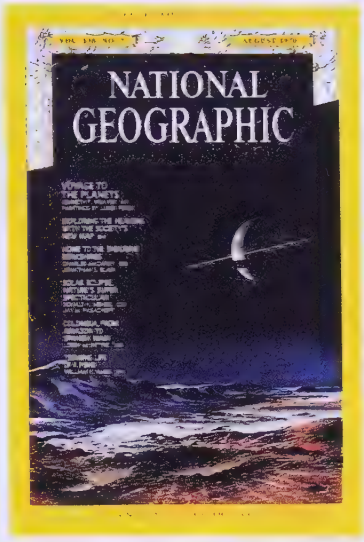

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Postage stamps issued in the United States in September 1988 commemorate four men who explored the continent of Antarctica by land, sea, and air. COURTESY U.S. POSTAL SERVICE

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RONDÔNIA
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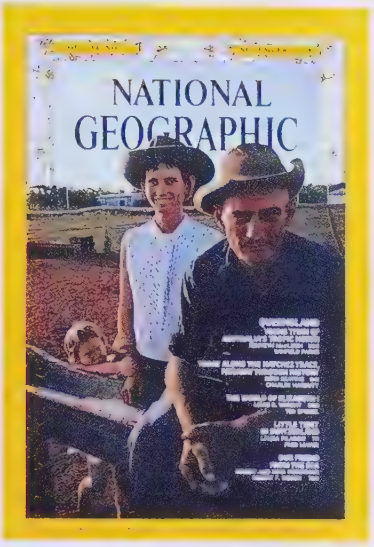

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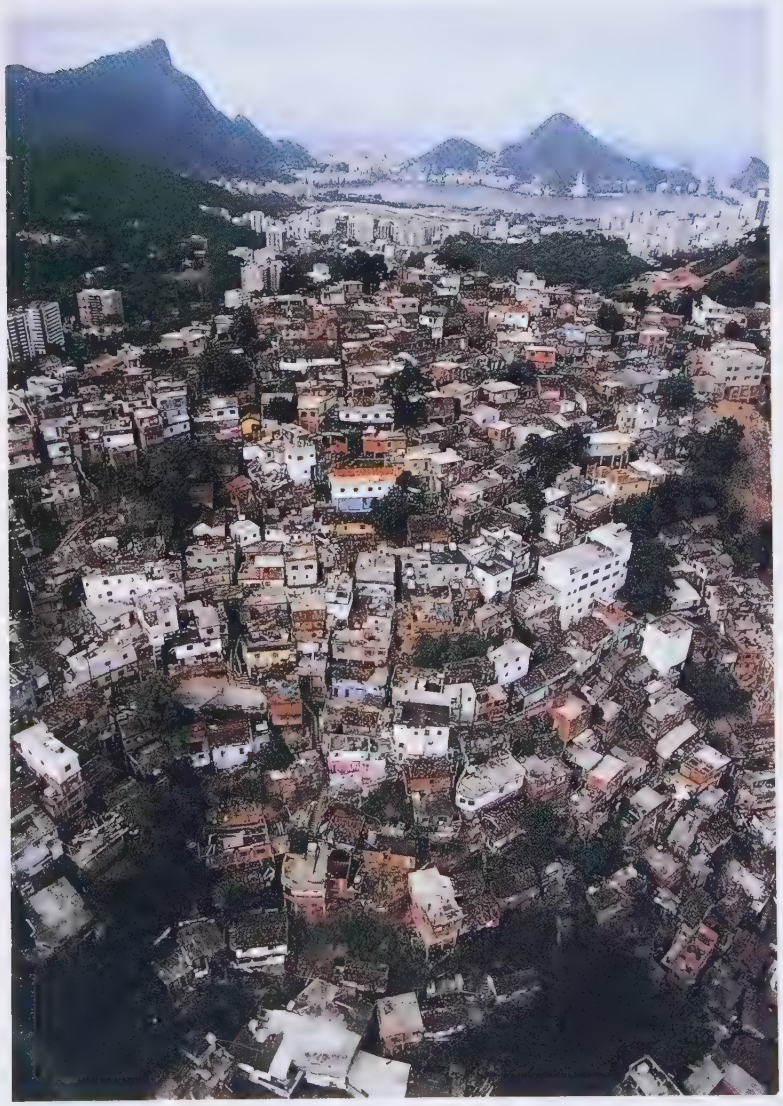

In the Rio de Janeiro slum of Rocinha, cinder block and brick replace sheet metal and cardboard in homes as Brazilians gain title to land and city services. STEPHANIE MAZE

Elegant cars of the 1920s parade up and down the broad and breezy Avenida Rio Branco, called Rio de Janeiro's "finest thoroughfare." FROM HARRIET CHALMERS ADAMS

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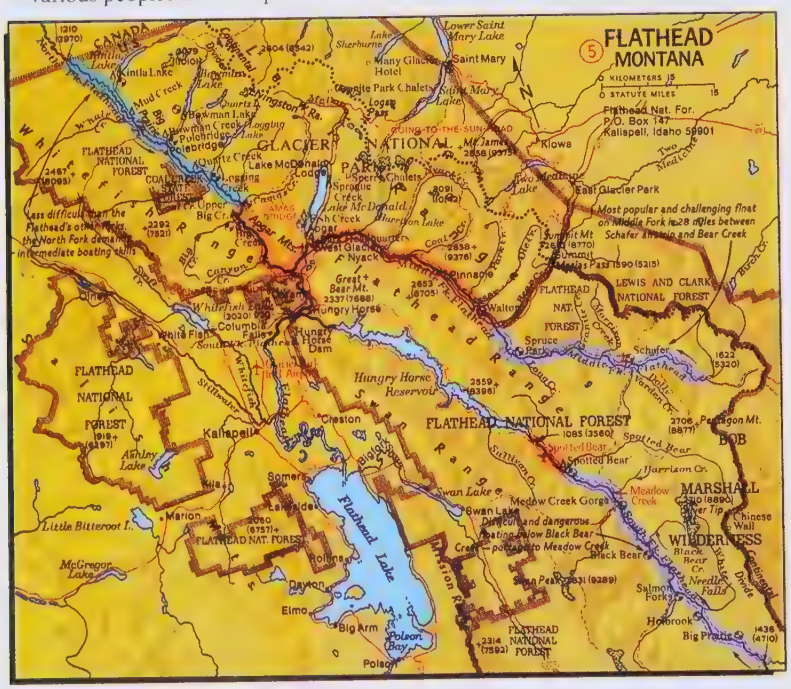
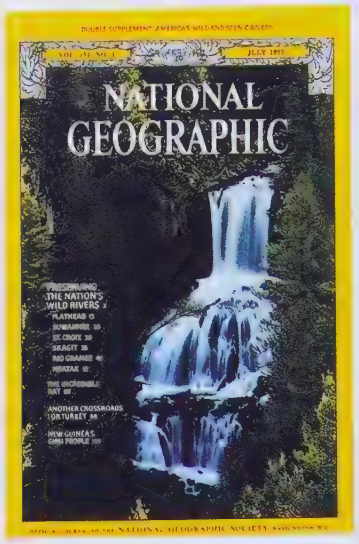


Spawning ground for cutthroat trout and Dolly Varden char, Montana's Flathead is part of the National Wild and Scenic Rivers System, mapped for the July 1977 GEOGRAPHIC.



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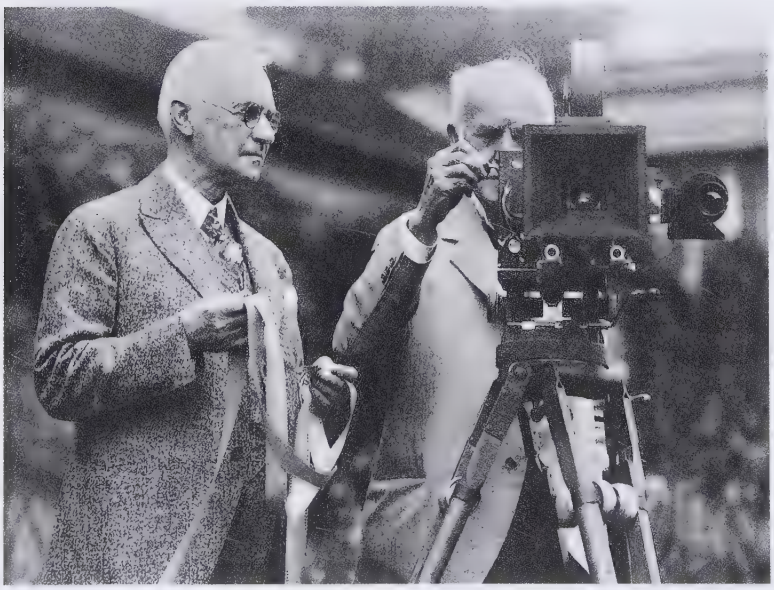

The father of popular photography, Eastman Kodak Company founder George Eastman, left, confers with the wizard of light, Thomas Edison, in 1928. EASTMAN HOUSE

Pilloried murderers from a Chinese dungeon were photographed in 1928 by legendary explorer Joseph Rock. JOSEPH F. ROCK

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A bighorn ram seeks an illegal handout on the Trans-Canada Highway in Banff National Park in the heart of the Canadian Rockies. JIM BRANDENBURG

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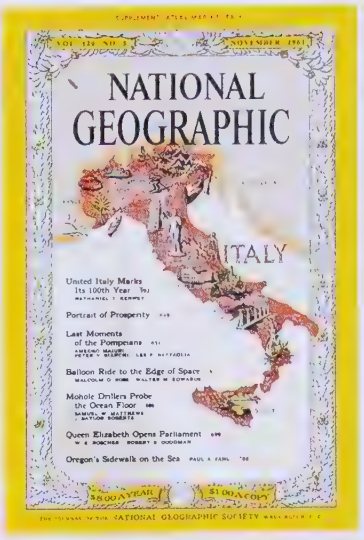

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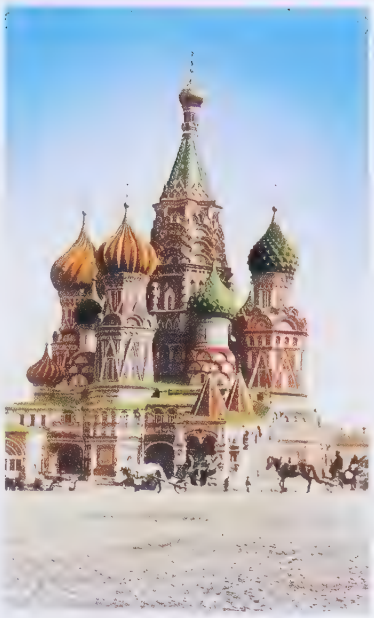

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A farmer and his donkey haul flowering nabiza, *turnip plants, in Zamora Province, Spain.*

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High Country of Colorado. By Alfred M. Bailey. Photos by author, Robert J. Niedrach, F. G. Brandenburg. 43-72, *July 1946*

The **SAGE PLAINS** of Oregon. By Frederick V. Coville. 395-404, *Dec. 1896*

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Abundant Life in a Desert Land. By Walter Meayers Edwards. 424-436, *Sept. 1973*

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SAGUARO NATIONAL MONUMENT, Arizona:

The Saguaro Forest. By H. L. Shantz. 515-532, *Apr. 1937*

SAGUENAY RIVER REGION, Quebec, Canada:

North Through History Aboard *White Mist.* By Melville Bell Grosvenor. Photos by Edwin Stuart Grosvenor. 1-55, *July 1970*

Sea to Lakes on the St. Lawrence. By George W. Long. Photos by B. Anthony Stewart and John E. Fletcher. 323-366, *Sept. 1950*

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Oasis of Art in the Sahara. By Henri Lhote. Photos by Kazuyoshi Nomachi. Contents: Rock paintings of Tassili-n-Ajjer, Algeria. 180-191, *Aug. 1987*

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The Sword and the Sermon. By Thomas J. Abercrombie. 3-45, *July 1972*

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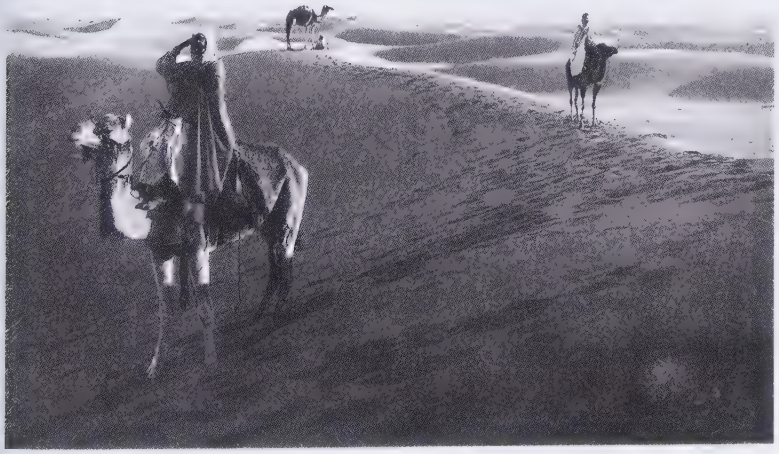
Freedom Speaks French in Ouagadougou. By John Scofield. 153-203, *Aug. 1966*

I Joined a Sahara Salt Caravan. By Victor Englebert. 694-711, *Nov. 1965*

Algeria: France's Stepchild, Problem and Promise. By Howard La Fay. Photos by Robert F. Sisson. 768-795, *June 1960*



North Africans cross the Sahara on camels, whose two-toed feet keep them from sinking into the sand and whose pacing gait can carry them 100 miles a day. LEHNERT AND LANDROCK

Veiled against wind, sand, and sun, a Tuareg tribesman rides his camel in the Algerian Sahara. GEORGE RODGER, MAGNUM

Sand in My Eyes. By Jinx Rodger. 664-705, *May 1958*

Oasis-hopping in the Sahara. By Maynard Owen Williams. 209-236, *Feb. 1949*

Trans-Africa Safari: A Motor Caravan Rolls Across Sahara and Jungle Through Realms of Dusky Potentates and the Land of Big-Lipped Women. By Lawrence Copley Thaw and Margaret Stout Thaw. 327-364, *Sept. 1938*

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Africa's Sahel: The Stricken Land. By William S. Ellis. Photos by Steve McCurry. 140-179, *Aug. 1987*

Niger's Wodaabe: "People of the Taboo." By Carol Beckwith. 483-509, *Oct. 1983*

Oursi, Magnet in the Desert. By Carole E. Devillers. 512-525, *Apr. 1980*

The Desert: An Age-old Challenge Grows. By Rick Gore. Photos by Georg Gerster and Bruce Dale. 586-639, *Nov. 1979*

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Michael and Aubine Kirtley. 282-298, *Aug. 1979*
The Niger: River of Sorrow, River of Hope. By Georg Gerster. 152-189, *Aug. 1975*
Drought Threatens the Tuareg World. By Victor Englebert. 544-571, *Apr. 1974*

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The Swans of Abbotsbury. By Michael Moynihan. 563-570, *Oct. 1959*

SAIGON, Vietnam:
Saigon: Eye of the Storm. By Peter T. White. Photos by W. E. Garrett. 834-872, *June 1965*
Slow Train Through Viet Nam's War. By Howard Sochurek. 412-444, *Sept. 1964*
South Viet Nam Fights the Red Tide. By Peter T. White. Photos by W. E. Garrett. 445-489, *Oct. 1961*
Indochina Faces the Dragon. By George W. Long. Photos by J. Baylor Roberts. 287-328, *Sept. 1952*
Portrait of Indochina. By W. Robert Moore and Maynard Owen Williams. Paintings by Jean Despujols. 461-490, *Apr. 1951*

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Solving Life Secrets of the Sailfish. By Gilbert Voss. Photos by B. Anthony Stewart. Paintings by Craig Phillips. NGS research grant. 859-872, *June 1956*

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SAILING a Sea of Fire. By Paul A. Zahl. 120-129, *July 1960*

SAILING CARS:
Wind Raiders of the Sahara. 436A-436B, *Sept. 1973*
Dry-land Fleet Sails the Sahara. By Jean du Boucher. Photos by Jonathan S. Blair. 696-725, *Nov. 1967*

SAILING Forbidden Coasts. By Ida Treat. 357-386, *Sept. 1931*

SAILING Iceland's Rugged Coasts. By Wright Britton. Photos by James A. Sugar. 228-265, *Aug. 1969*

The **SAILING** Oystermen of Chesapeake Bay. By Luis Marden. 798-819, *Dec. 1967*

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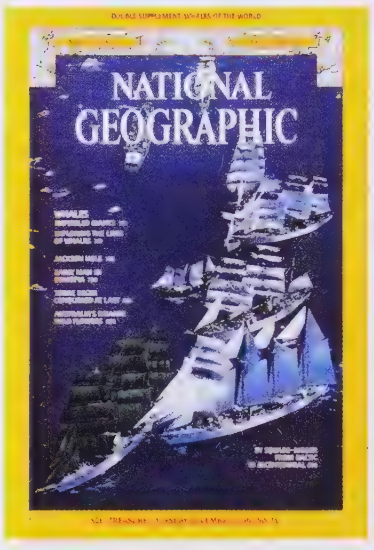
By Square-rigger from Baltic to Bicentennial. By Kenneth Garrett. Included: The tall-ships race. 824-857, *Dec. 1976*
Life's Tempo on Nantucket. By Peter Benchley. Photos by James L. Stanfield. 810-839, *June 1970*
The Age of Sail Lives On at Mystic. By



Alan Villiers. Photos by Weston Kemp. Included: *Alice, Charles W. Morgan, Joseph Conrad, L. A. Dunton.* 220-239, *Aug. 1968*
The Sailing Oystermen of Chesapeake Bay. By Luis Marden. 798-819, *Dec. 1967*
Windjamming Around New England. By Tom Horgan. Photos by Robert F. Sisson. Included: *Abigail Chandler, Bluenose, Bolero, Bowdoin, Charles W. Morgan, Daniel I. Tenny, Fiddlers' Green, Gertrude L. Thebaud, Great Republic, Hannah, Hero, Joseph Conrad, Lagoda, Malabar XIII, Manxman, Nomad, Regina M., Telegraph, Wanderer, Yankee.* 141-169, *Aug. 1950*
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Men-Birds Soar on Boiling Air. By Frederick G. Vosburgh. 123-140, *July 1938*
On the Wings of the Wind: In Motorless Planes, Pilots Ride in Flying-Fox Fashion Cruising on Upward Air Streams and Lifted by the Suction of Moving Clouds. By Howard Siepen. 751-780, *June 1929*

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Bonnie Scotland, Postwar Style. By Isobel Wylie Hutchison. 545-601, *May 1946*

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Exploring Our Forgotten Century: Between Columbus and Jamestown. By Joseph Judge. Photos by Bill Ballenberg. Paintings by John Berkey. 330-363, *Mar. 1988*
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The Great St. Bernard Hospice Today. By George Pickow. 49-62, *Jan. 1957*

ST. BERNARD HOSPICE, Switzerland:
The Great St. Bernard Hospice Today. By George Pickow. 49-62, *Jan. 1957*

ST. BOTOLPH'S Town: the Original Boston. By Veronica Thomas. Photos by James L. Amos. 382-389, *Sept. 1974*

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Sea Islands: Adventuring Along the South's Surprising Coast. By James Cerruti. Photos by Thomas Nebbia and James L. Amos. 366-393, *Mar. 1971*

ST. CATHERINE'S MONASTERY, Sinai Peninsula, Egypt:
Island of Faith in the Sinai Wilderness. By George H. Forsyth. Photos by Robert F. Sisson. 82-106, *Jan. 1964*
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The U. S. Virgin Islands. By Thomas J. Colin. Photos by William Albert Allard and Cary Wolinsky. 225-243, *Feb. 1981*
Buck Island–Underwater Jewel. By Jerry and Idaz Greenberg. 677-683, *May 1971*
The American Virgins: After Dark Days, These Adopted Daughters of the United States Are Finding a New Place in the Caribbean Sun. By DuBose Heyward and Daisy Reck. 273-308, *Sept. 1940*
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Napoleon. By John J. Putman. Photos by Gordon W. Gahan. 142-189, *Feb. 1982*
The Sunken Treasure of St. Helena. By Robert Sténuit. Photos by Bates Littlehales. 562-576, *Oct. 1978*
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Mount St. Helens Aftermath: The Mountain That Was–and Will Be. By Rowe Findley. Photos by Steve Raymer. 713-733, *Dec. 1981*
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Channel Ports–And Some Others. By Florence Craig Albrecht. 1-55, *July 1915*

SAINT JOHN, New Brunswick, Canada:
New Brunswick Down by the Sea. By Lawrence J. Burpee. 595-614, *May 1941*

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SAINT JOHN RIVER AND VALLEY, Maine-New Brunswick:
Madawaska: Down East With a French Accent. By Perry Garfinkel. Photos by Cary Wolinsky. 380-409, *Sept. 1980*
Atlantic Estuarine Tides. By Mark S. W. Jefferson. 400-409, *Sept. 1898*

Avian casualty lies in ash erupted from Mount St. Helens, in Washington State, on May 18, 1980. KEN WHITMIRE, IMAGES WEST

ST. JOHN'S, Newfoundland, Canada:
Newfoundland Trusts in the Sea. By Gary Jennings. Photos by Sam Abell. 112-141, *Jan. 1974*
Newfoundland, Canada's New Province. By Andrew H. Brown. Photos by author and Robert F. Sisson. 777-812, *June 1949*
Newfoundland, North Atlantic Rampart: From the "First Base of American Defense" Planes Fly to Britain's Aid over Stout Fishing Schooners of the Grand Banks. By George Whiteley, Jr. 111-140, *July 1941*

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ST. LAWRENCE, Gulf of:
Sea Bird Cities Off Audubon's Labrador. By Arthur A. Allen. NGS research grant. 755-774, *June 1948*
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ST. LAWRENCE (River), Canada-U. S.:
The St. Lawrence River: Canada's Highway to the Sea. By William S. Ellis. Photos by Bruce Dale. 586-623, *May 1980*
North Through History Aboard *White Mist.* By Melville Bell Grosvenor. Photos by Edwin Stuart Grosvenor. 1-55, *July 1970*
The St. Lawrence, River Key to Canada. By Howard La Fay. Photos by John Launois. 622-667, *May 1967*
Sea to Lakes on the St. Lawrence. By George W. Long. Photos by B. Anthony Stewart and John E. Fletcher. 323-366, *Sept. 1950*
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New St. Lawrence Seaway Opens the Great Lakes to the World. By Andrew H. Brown. 299-339, *Mar. 1959*

ST. LEVAN, BARON and BARONESS:
Fabled Mount of St. Michael. By Alan Villiers. Photos by Bates Littlehales. Note: Baron St. Levan is the owner of Mount St. Michael. 880-898, *June 1964*

ST. LOUIS, Île, Paris, France:
The More Paris Changes.... By Howell Walker. Photos by Gordon W. Gahan. 64-103, *July 1972*
Île de la Cité, Birthplace of Paris. By Kenneth MacLeish. Photos by Bruce Dale. 680-719, *May 1968*

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"Pyramids" of the New World. By Neil Merton Judd. Included: "The Mound City." 105-128, *Jan. 1948*
These Missourians. By Frederick Simpich. 277-310, *Mar. 1946*

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Finisterre Sails the Windward Islands. By Carleton Mitchell. Photos by Winfield Parks. 755-801, *Dec. 1965*
Americans in the Caribbean. By Luis Marden. 723-758, *June 1942*
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ST. MAGNUS CATHEDRAL, Orkney Islands, Scotland:
The Orkneys and Shetlands–A Mysterious Group of Islands. By Charles S. Olcott. 197-228, *Feb. 1921*

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St. Malo, Ancient City of Corsairs: An Old Brittany Seaport Whose Past Bristles with Cannons and Cutlasses. By Junius B. Wood. 131-177, *Aug. 1929*

ST. MARGARETS BAY, Nova Scotia, Canada:
Plight of the Bluefin Tuna. By Michael J. A. Butler. Photos by David Doubilet. Paintings by Stanley Meltzoff. 220-239, *Aug. 1982*

ST. MARK'S CATHEDRAL, Venice, Italy:
Venice. By Karl Stieler. 587-630, *June 1915*

Leg of the stainless steel Gateway Arch in St. Louis glows in the afternoon sun during construction in 1964. BRUCE DALE, NGS

ST. MARTIN (Island), Netherlands Antilles. *See* Sint Maarten

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Sea Bird Cities Off Audubon's Labrador. By Arthur A. Allen. Contents: Birds on Cliff, Harbour, and Middle Islands. NGS research grant. 755-774, *June 1948*

ST. MARYS, West Virginia:
So Much Happens Along the Ohio River. By Frederick Simpich. Photos by Justin Locke. 177-212, *Feb. 1950*

ST. MICHAEL'S (Island), Azores:
The Azores: Picturesque and Historic Half-way House of American Transatlantic Aviators. By Arminius T. Haeberle. 514-545, *June 1919*

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Fabled Mount of St. Michael. By Alan Villiers. Photos by Bates Littlehales. 880-898, *June 1964*

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ST. PAUL, Minnesota:
Minneapolis and St. Paul. By Thomas J. Abercrombie. Photos by Annie Griffiths. 665-691, *Nov. 1980*
Minnesota, Where Water Is the Magic Word. By David S. Boyer. Photos by author and David Brill. 200-229, *Feb. 1976*
The Upper Mississippi. By Willard Price. 651-699, *Nov. 1958*
Minnesota Makes Ideas Pay. By Frederick G. Vosburgh. Photos by John E. Fletcher and B. Anthony Stewart. 291-336, *Sept. 1949*

ST. PETER'S (Basilica), Vatican City:
Vatican City. By James Fallows. Photos by James L. Stanfield. 723-775, *Dec. 1985*
St. Peter's, Rome's Church of Popes. By Aubrey Menen. Photos by Albert Moldvay. 865-879, *Dec. 1971*
When in Rome.... By Stuart E. Jones. Photos by Winfield Parks. 741-789, *June 1970*
Rome: Eternal City with a Modern Air. By Harnett T. Kane. Photos by B. Anthony Stewart. 437-491, *Apr. 1957*
The Splendor of Rome. By Florence Craig Albrecht. 593-626, *June 1922*
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Martinique: A Tropical Bit of France. By Gwen Drayton Allmon. Photos by Charles Allmon. 255-283, *Feb. 1959*
The Recent Volcanic Eruptions in the West Indies. By Israel C. Russell. 267-285, *July 1902*
Lafcadio Hearn on the Island and People of Martinique. 214-216, *June 1902*

ST. PIERRE AND MIQUELON (Islands), North Atlantic Ocean:
White Mist Cruises to Wreck-haunted St. Pierre and Miquelon. By Melville Bell Grosvenor. 378-419, *Sept. 1967*

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Sea Islands: Adventuring Along the South's Surprising Coast. By James Cerruti. Photos by Thomas Nebbia and James L. Amos. 366-393, *Mar. 1971*

The Golden Isles of Guale. By W. Robert Moore. 235-264, *Feb. 1934*

SAINT STEPHEN'S Fete in Budapest. By De Witt Clinton Falls. 548-558, *Aug. 1907*

ST. THOMAS (Island), U. S. Virgin Islands:

The U. S. Virgin Islands. By Thomas J. Colin. Photos by William Albert Allard and Cary Wolinsky. 225-243, *Feb. 1981*

A Fresh Breeze Stirs the Leewards. By Carleton Mitchell. Photos by Winfield Parks. 488-537, *Oct. 1966*

Virgin Islands: Tropical Playland, U.S.A. By John Scofield. Photos by Charles Allmon. 201-232, *Feb. 1956*

The American Virgins: After Dark Days, These Adopted Daughters of the United States Are Finding a New Place in the Caribbean Sun. By DuBose Heyward and Daisy Reck. 273-308, *Sept. 1940*

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St. Vincent, the Grenadines, and Grenada: Taking It as It Comes. By Ethel A. Starbird. Photos by Cotton Coulson. 399-425, *Sept. 1979*

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Girl gazes seaward from Sailors' Island off the coast of St. Pierre, one of a cluster of French isles near Newfoundland's south coast. WILBUR E. GARRETT, NGS

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Rhodesia, a House Divided. By Allan C. Fisher, Jr. Photos by Thomas Nebbia. 641-671, *May 1975*
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Salt–The Essence of Life. By Gordon Young. Photos by Volkmar Wentzel and Georg Gerster. 381-401, *Sept. 1977*
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The Rising Great Salt Lake: No Way to Run a Desert. By Rick Gore. Photos by Jim Richardson. 694-719, *June 1985*
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Strange World of Palau's Salt Lakes. By William M. Hamner. Photos by David Doubilet. 264-282, *Feb. 1982*
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The Colorado Desert. By W. C. Mendenhall. 681-701, *Aug. 1909*
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During spawning-season migration back to its birthplace, a salmon struggles up the Brooks River in Alaska's Katmai National Park and Preserve. WINFIELD PARKS, NGS

Wreck of H.M.S. *Pandora*. By Luis Marden. 423-451, *Oct. 1985*
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Occupied Austria, Outpost of Democracy. By George W. Long. Photos by Volkmar Wentzel. 749-790, *June 1951*
This Was Austria. 71-86, *July 1945*
The Salzkammergut, a Playground of Austria. By Florence Polk Holding. 445-485, *Apr. 1937*

SALZKAMMERGUT (Region), Austria:
Salzkammergut, Austria's Alpine Playground. By Beverley M. Bowie. Photos by Volkmar Wentzel. 246-275, *Aug. 1960*
The Salzkammergut, a Playground of Austria. By Florence Polk Holding. 445-485, *Apr. 1937*

SAM HOUSTON: A Man Too Big for Texas. By Bart McDowell. Photos by Charles O'Rear. Included: The Battle of San Jacinto. 311-329, *Mar. 1986*

SAMANA CAY, Bahama Islands:
Where Columbus Found the New World. By Joseph Judge. Photos by James L. Stanfield. Note: The National Geographic Society now believes Samana Cay to be first landfall of Columbus in the Americas. 566-599, *Nov. 1986*
❁ *Where Did Columbus Discover America? New Evidence Marks Landfall at Samana Cay.* Included: Threading the Islands: Which Track Fits?; Samana Cay and the Columbus Log. *Nov. 1986*
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Hashemite Jordan, Arab Heartland. By John Scofield. 841-856, *Dec. 1952*
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Russia's Orphan Races: Picturesque Peoples Who Cluster on the Southeastern Borderland of the Vast Slav Dominions. By Maynard Owen Williams. 245-278, *Oct. 1918*

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The Two Samoas, Still Coming of Age. By Robert Booth. Photos by Melinda Berge. Included: American Samoa and Western Samoa. 452-473, *Oct. 1985*
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A Teen-ager Sails the World Alone. By Robin Lee Graham. 445-491, *Oct. 1968*
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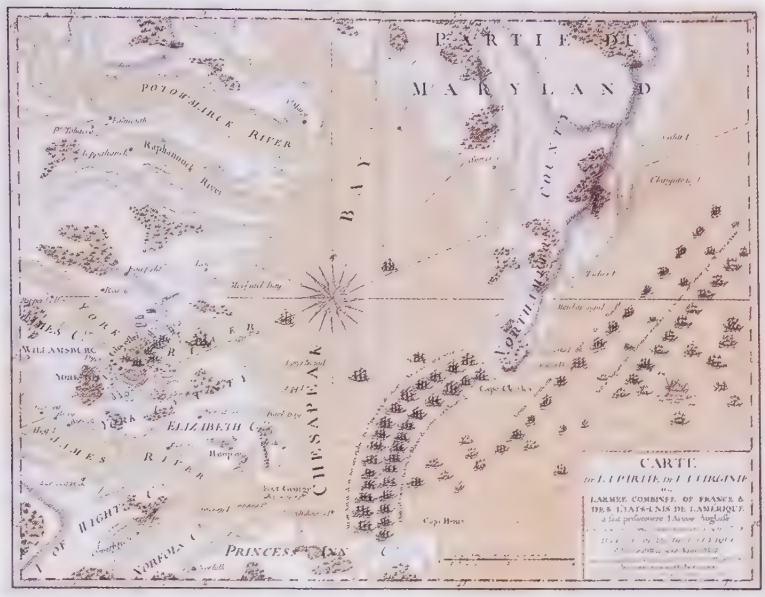

French map shows the Yorktown blockade during the American Revolution; artifacts have been salvaged from a sunken British ship. FREDERICK S. HICKS COLLECTION, 1967

Nation. By Maurice Shadbolt. Photos by Robert B. Goodman. 573-602, *Oct. 1962*
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SAN. *See* Bushmen

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SAN ANTONIO, Texas:
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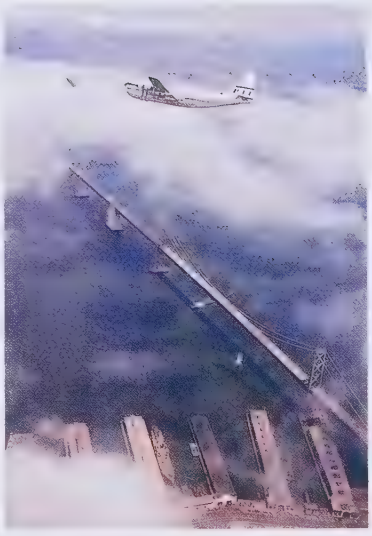
San Antonio: "Texas, Actin' Kind of Natural." By Fred Kline. Photos by David Hiser. 524-549, *Apr. 1976*
The Fabulous State of Texas. By Stanley Walker. Photos by B. Anthony Stewart and Thomas Nebbia. 149-195, *Feb. 1961*
Carnival in San Antonio. By Mason Sutherland. Photos by J. Baylor Roberts. 813-844, *Dec. 1947*

SAN BENITO ISLANDS, Mexico:
Cruise of the *Kinkajou:* Among Desert Islands of Mexico Voyagers Find Outdoor Laboratories for the Naturalist and Ideal Fishing Grounds for the Sportsman. By Alfred M. Bailey. 339-366, *Sept. 1941*



San Francisco's high-flying Bay Bridge spans eight miles of water and an island to reach Oakland. LUIS MARDEN, NGS

SAN BLAS INDIANS:
The Land That Links the Americas. Photos by Luis Marden. 601-624, *Nov. 1941*
Arch-Isolationists, the San Blas Indians: Coconuts Serve as Cash on Islands Off the Panama Coast Where Tribesmen Cling to Their Ancient Ways and Discourage Visitors. By Corinne B. Feeney. 193-220, *Feb. 1941*
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SAN CRISTÓBAL (Island), Galápagos Islands:
The Dream Ship: The Story of a Voyage of Adventure More Than Half Around the World in a 47-foot Lifeboat. By Ralph Stock. 1-52, *Jan. 1921*

SAN DIEGO, California:
San Diego, California's Plymouth Rock. By Allan C. Fisher, Jr. Photos by James L. Amos. 114-147, *July 1969*
California, the Golden Magnet. By William Graves. 595-679. I. The South. Photos by Thomas Nebbia. 595-639, *May 1966*
New Rush to Golden California. By George W. Long. 723-802, *June 1954*
California, Horn of Plenty. By Frederick Simpich. Photos by Willard R. Culver. 553-594, *May 1949*
San Diego Can't Believe It. By Frederick Simpich. 45-80, *Jan. 1942*

SAN FRANCISCO, California:
San Francisco Bay: The Beauty and the Battles. By Cliff Tarpy. Photos by James A. Sugar. 814-845, *June 1981*
Chinatown, the Gilded Ghetto. By William Albert Allard. 627-643, *Nov. 1975*
This Changing Earth. By Samuel W. Matthews. Included: 1906 earthquake. 1-37, *Jan. 1973*
Barehanded Battle to Cleanse the Bay. By Peter T. White. Photos by Jonathan S. Blair. 866-881, *June 1971*
San Francisco Bay, the Westward Gate. By William Graves. Photos by James L. Stanfield. 593-637, *Nov. 1969*
California, the Golden Magnet. By William Graves. 595-679. II. Nature's North. Photos by James P. Blair and Jonathan S. Blair. 641-679, *May 1966*
❄ *Northern California; Southern California.* Atlas series. *May 1966*
Boom on San Francisco Bay. By Franc Shor. Photos by David S. Boyer. 181-226, *Aug. 1956*
New Rush to Golden California. By George W. Long. 723-802, *June 1954*
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San Francisco: Gibraltar of the West Coast. By La Verne Bradley. 279-308, *Mar. 1943*
Out in San Francisco: Fed on Gold Dust and Fattened by Sea Trade, a Pioneer Village Becomes a Busy World Port. By Frederick Simpich. 395-434, *Apr. 1932*
The Wonderland of California. By Herman Whitaker. 57-104, *July 1915*
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The California Earthquake. 325-343, *June 1906*
The Probable Cause of the San Francisco Earthquake. By Frederick Leslie Ransome. 280-296, *May 1906*
The Record of the Great Earthquake Written in Washington by the Seismograph of the U. S. Weather Bureau. By C. F. Marvin. 296-298, *May 1906*
The San Francisco Earthquake of April 18, 1906, as Recorded by the Coast and Geodetic Survey Magnetic Observatories. By L. A. Bauer and J. E. Burbank. 298-300, *May 1906*
The Sea Fogs of San Francisco. 108-114, *Mar. 1901*

SAN FRANCISCO BAY, California:
San Francisco Bay: The Beauty and the Battles. By Cliff Tarpy. Photos by James A. Sugar. 814-845, *June 1981*
Golden Gate–Of City, Ships, and Surf. By David S. Boyer. 98-105, *July 1979*
Barehanded Battle to Cleanse the Bay. By Peter T. White. Photos by Jonathan S. Blair. 866-881, *June 1971*
San Francisco Bay, the Westward Gate. By William Graves. Photos by James L. Stanfield. 593-637, *Nov. 1969*
Boom on San Francisco Bay. By Franc Shor. Photos by David S. Boyer. 181-226, *Aug. 1956*

SAN IGNACIO LAGOON, Baja California Sur, Mexico:

Gray Whales of San Ignacio. By Steven L. Swartz and Mary Lou Jones. Photos by François Gohier. NGS research grant. 754-771, *June 1987*

SAN JACINTO WEEK (Fiesta):
Carnival in San Antonio. By Mason Sutherland. Photos by J. Baylor Roberts. 813-844, *Dec. 1947*

SAN JOAQUIN (River), California:
California's Surprising Inland Delta. By Judith and Neil Morgan. Photos by Charles O'Rear. 409-430, *Sept. 1976*
More Water for California's Great Central Valley. By Frederick Simpich. 645-664, *Nov. 1946*

SAN JOSÉ, Costa Rica:
Land of the Painted Oxcarts. By Luis Marden. 409-456, *Oct. 1946*
Costa Rica, Land of the Banana. By Paul B. Popenoe. 201-220, *Feb. 1922*
Costa Rica–Vulcan's Smithy. By H. Pittier. 494-525, *June 1910*

SAN JUAN, Puerto Rico:
The Uncertain State of Puerto Rico. By Bill Richards. Photos by Stephanie Maze. 516-543, *Apr. 1983*
Puerto Rico's Seven-league Bootstraps. By Bart McDowell. Photos by B. Anthony Stewart. 755-793, *Dec. 1962*
Growing Pains Beset Puerto Rico. By William H. Nicholas. Photos by Justin Locke. 419-460, *Apr. 1951*
Puerto Rico: Watchdog of the Caribbean: Venerable Domain Under American Flag Has New Role as West Indian Stronghold and Sentinel of the Panama Canal. By E. John Long. 697-738, *Dec. 1939*

SAN JUAN (River), Colorado-New Mexico-Utah:
Lake Powell: Waterway to Desert Wonders. By Walter Meayers Edwards. 44-75, *July 1967*
Desert River Through Navajo Land. By Alfred M. Bailey. Photos by author and Fred G. Brandenburg. 149-172, *Aug. 1947*
Beyond the Clay Hills: An Account of the National Geographic Society's Reconnaissance of a Previously Unexplored Section in Utah. By Neil M. Judd. 275-302, *Mar. 1924*

SAN JUAN ISLANDS, Washington:
Puget Sound, Sea Gate of the Pacific Northwest. By William Graves. Photos by David Alan Harvey. 71-97, *Jan. 1977*

SAN JUAN MOUNTAINS, Colorado-New Mexico:
Colorado's Friendly Topland. By Robert M. Ormes. 187-214, *Aug. 1951*
Landslides and Rock Avalanches. By Guy Elliott Mitchell. 277-287, *Apr. 1910*

SAN JUAN TEOTIHUACAN, Mexico:
An Interesting Visit to the Ancient Pyramids of San Juan Teotihuacan. By A. C. Galloway. 1041-1050, *Dec. 1910*
See also Teotihuacán

SAN LORENZO, Veracruz, Mexico:
On the Trail of La Venta Man. By Matthew W. Stirling. Photos by Richard H. Stewart. Included: Hunting Mexico's Buried Temples. NGS research grant. 137-172, *Feb. 1947*

SAN MARCOS, Castillo de, St. Augustine, Florida. *See* Castillo de San Marcos

SAN MARINO:
San Marino, Little Land of Liberty. By Donna Hamilton Shor. Photos by Ted H. Funk. 233-251, *Aug. 1967*
United Italy Marks Its 100th Year. By Nathaniel T. Kenney. 593-647, *Nov. 1961*
Our Littlest Ally. By Alice Rohe. 139-163, *Aug. 1918*

SAN MARINO, California. *See* Henry E. Huntington Library and Art Gallery

SAN MIGUEL MOUNTAINS, Colorado:
Colorado's Friendly Topland. By Robert M. Ormes. 187-214, *Aug. 1951*

SAN SALVADOR, El Salvador:
Coffee Is King in El Salvador. By Luis Marden. 575-616, *Nov. 1944*
Volcano-Girded Salvador: A Prosperous Central American State with the Densest Rural Population in the Western World. By Harriet Chalmers Adams. 189-200, *Feb. 1922*

SAN SALVADOR (First Landfall of Columbus):
Where Columbus Found the New World. By Joseph Judge. Photos by James L. Stanfield. Note: The

Wine maker in San Marino, the world's oldest independent republic, stomps juice from grapes in the early 1900s. ALICE ROHE

National Geographic Society now believes Samana Cay to be first landfall of Columbus in the Americas. 566-599, *Nov. 1986*
Where Did Columbus Discover America? New Evidence Marks Landfall at Samana Cay. Included: Threading the Islands: Which Track Fits?; Samana Cay and the Columbus Log. *Nov. 1986*
The First Landfall of Columbus. By Jacques W. Redway. Included: Mariguana (Mayaguana), Samaná, Watling (San Salvador). 179-192, *Dec. 29, 1894*

SAN SALVADOR (Island), Bahama Islands. *See* former name, Watling Island

SAN SALVADOR VOLCANO, El Salvador:
Coffee Is King in El Salvador. By Luis Marden. 575-616, *Nov. 1944*

SAN SIMEON, California. *See* Hearst San Simeon State Historical Monument

SAN VICENTE (Hacienda), Chile:
On a Chilean Hacienda. Photos by E. P. Haddon. 489-496, *Oct. 1944*

SANCTA SOPHIA (Mosque), Istanbul, Turkey:
Constantinople Today. By Solita Solano. 647-680, *June 1922*
Constantinople and Sancta Sophia. By Edwin A. Grosvenor. 459-482, *May 1915*

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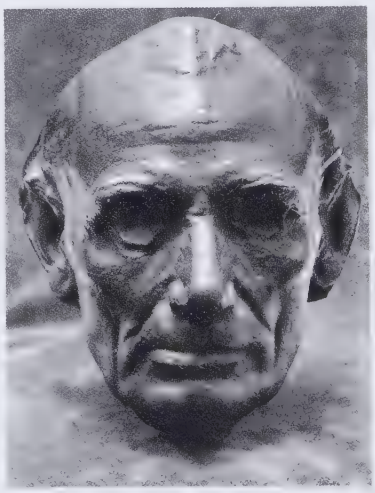

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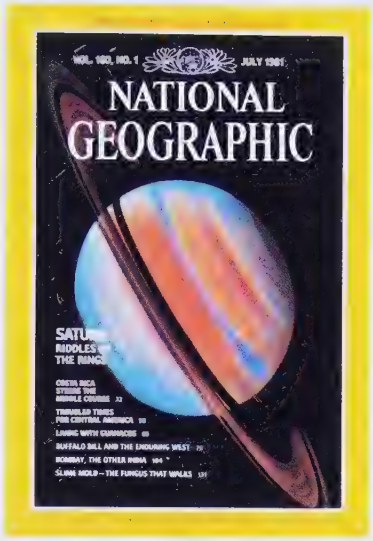

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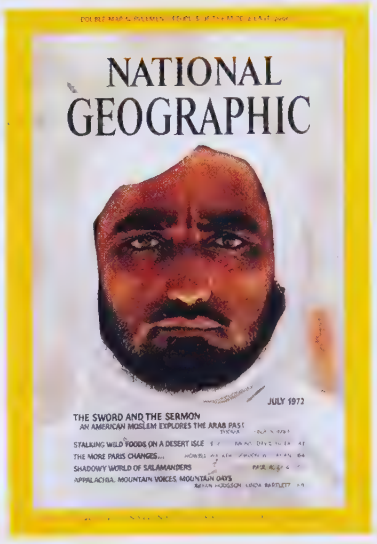
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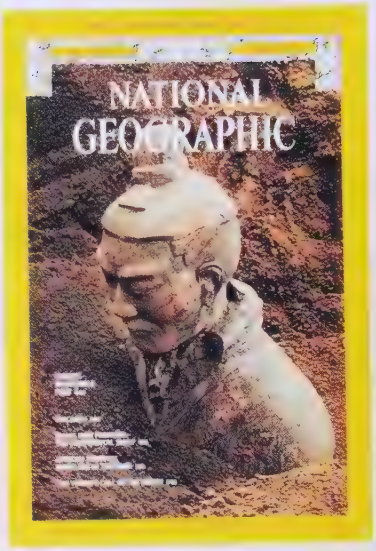

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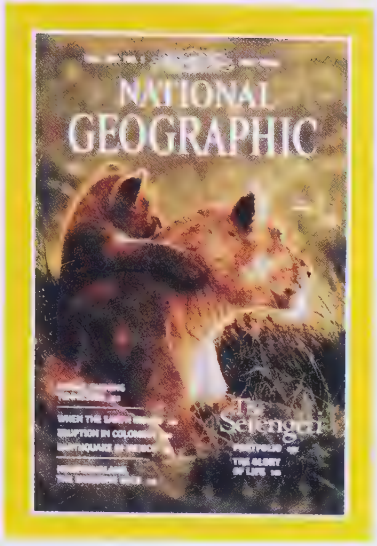

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Birdcage brightens Shanghai's Happiness Concentrated, once an alley of brothels and opium dens. BRUCE DALE, NGS

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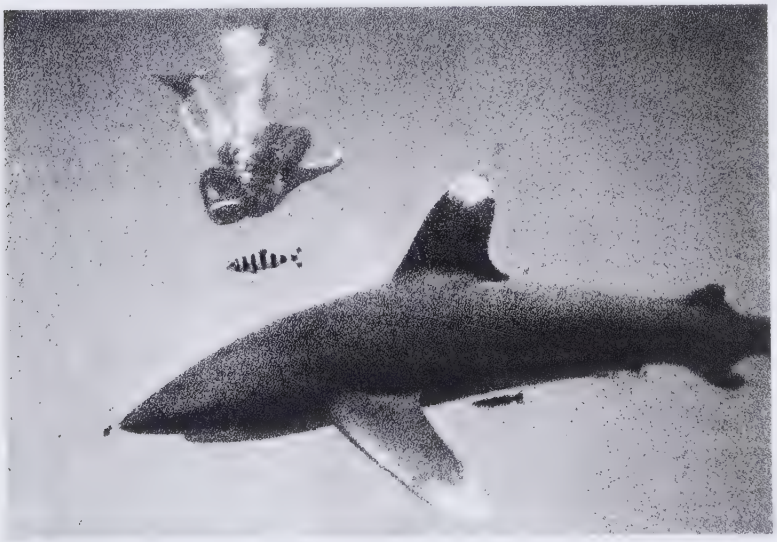
Winter Caravan to the Roof of the



Fifty feet underwater off the Cape Verde Islands a diver overtakes an eight-foot shark and its attendant pilot fish. JACQUES-YVES COUSTEAU, PHILIPPE TAILLIEZ, FRÉDÉRIC DUMAS

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Merino sheep brought wealth to the Iberian Peninsula, where the breed was developed for its fine white wool. CARY WOLINSKY, STOCK, BOSTON

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Skyline Trail from Maine to Georgia. By Andrew H. Brown. Photos by Robert F. Sisson. 219-251, *Aug. 1949*

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Shenandoah, I Long to Hear You. By

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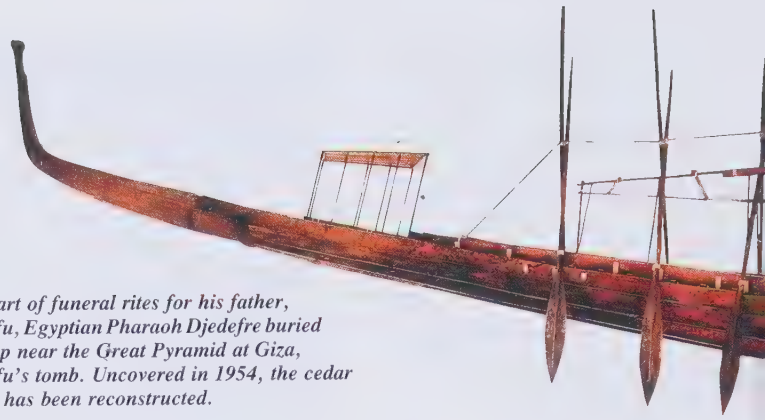

As part of funeral rites for his father, Khufu, Egyptian Pharaoh Djedefre buried a ship near the Great Pyramid at Giza, Khufu's tomb. Uncovered in 1954, the cedar bark has been reconstructed.
VICTOR R. BOSWELL, JR., NGS

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Maytime Miracle in Sherwood Gardens. By Nathaniel T. Kenney. 700-709, *May 1956*
Maytime in the Heart of Maryland. Photos by B. Anthony Stewart and Charles Martin. 441-448, *Apr. 1941*

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Striking It Rich in the North Sea. By Rick Gore. Photos by Dick Durrance II. 519-549, *Apr. 1977*
Viking Festival in the Shetlands. Photos by Karl Gullers. 853-862, *Dec. 1954*
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New Orleans: Jambalaya on the Levee. By Harnett T. Kane. Photos by Justin Locke. 143-184, *Feb. 1953*
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Work-hard, Play-hard Michigan. By Andrew H. Brown. 279-320, *Mar. 1952*
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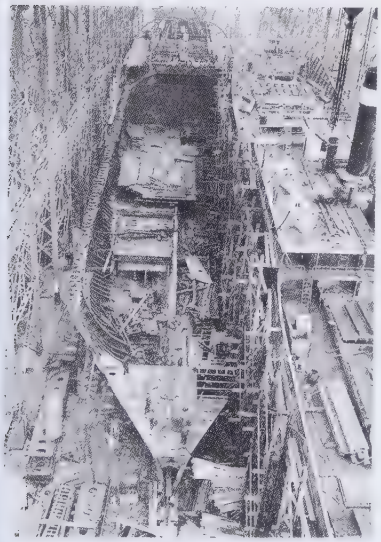

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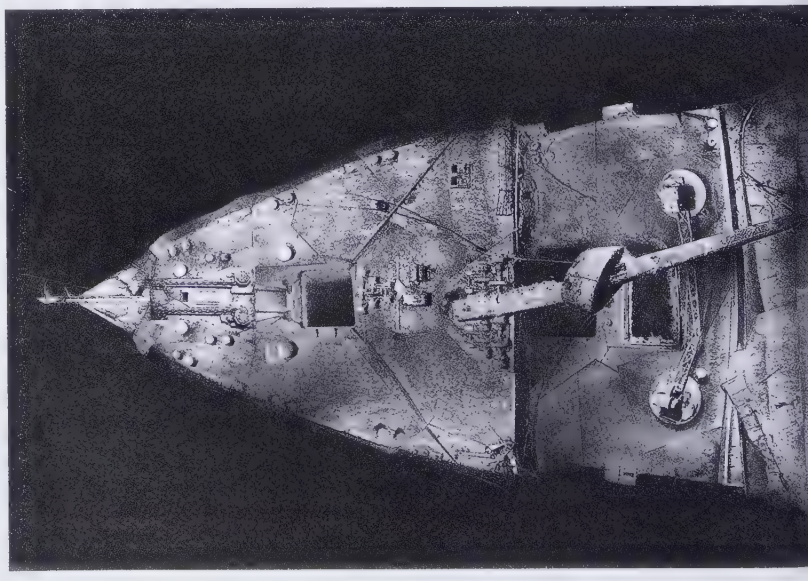
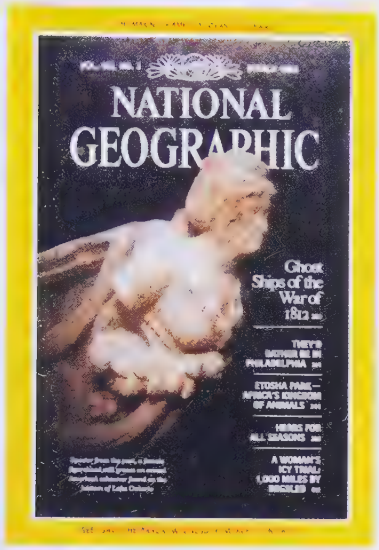


Combination of 108 photographs creates a portrait of a shipwreck: the battered forward section of the* Titanic, *which has lain on the floor of the North Atlantic since 1912. © 1987 BALLARD & FAMILY



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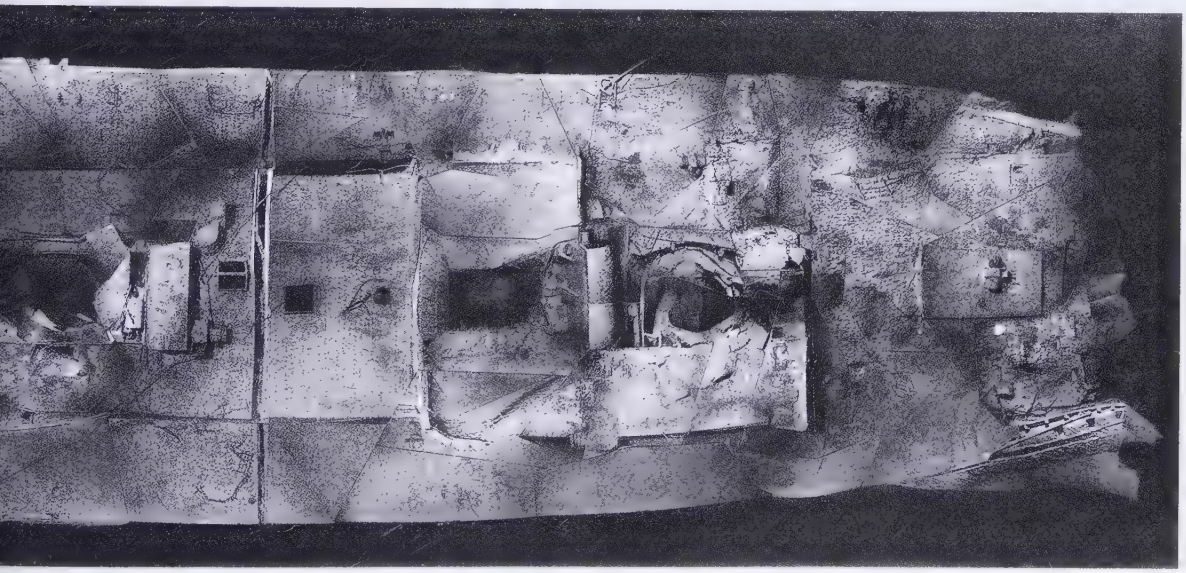

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At California's Mono Lake a Wilson's phalarope picks through shallow water for food with its long beak. JOSEPH R. JEHL, JR

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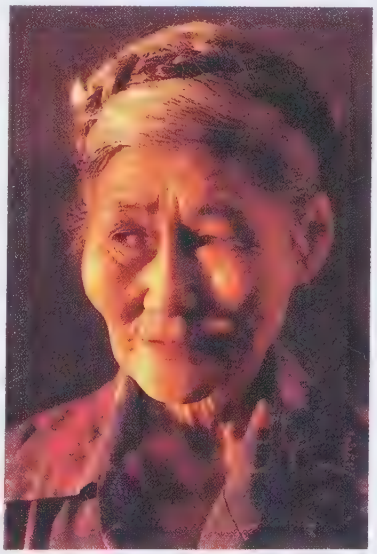

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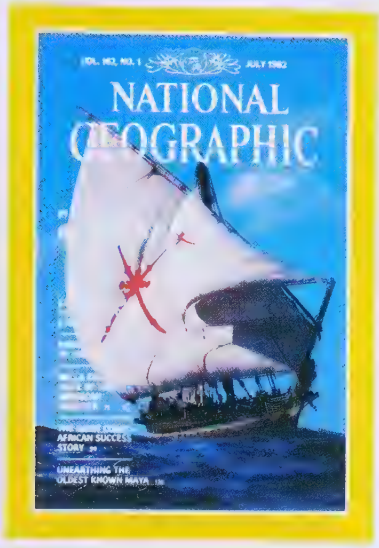

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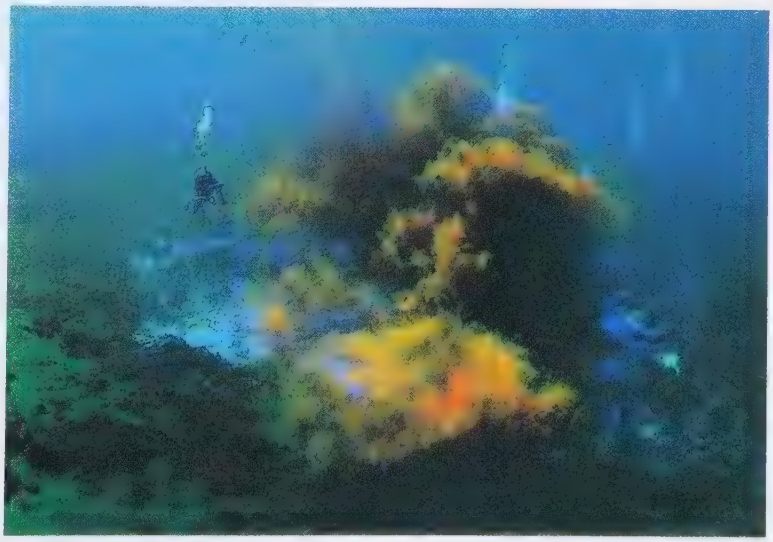

Billowing dye allows scientists to time the rate of water exchange in the largest of Ewens Ponds, a trio of interconnected sinkholes in southeastern Australia. DAVID DOUBILET

Red Horse's drawing of the 1876 Battle of Little Bighorn probably combines personal and Sioux tribal memories. NATIONAL ANTHROPOLOGICAL ARCHIVES, SMITHSONIAN INSTITUTION

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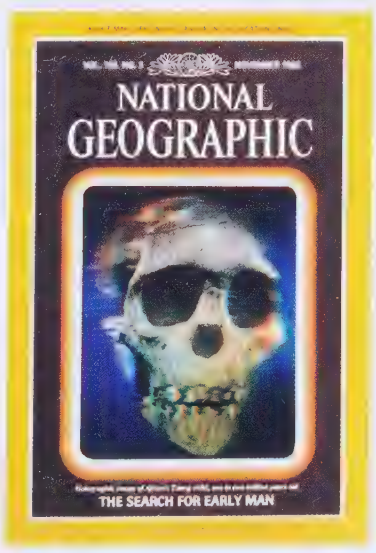

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The Treasure of Porto Santo. By Robert Sténuit. Photos by author and William R. Curtsinger. 260-275, *Aug. 1975*

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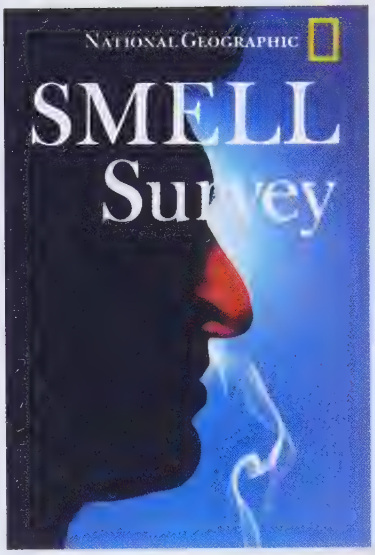

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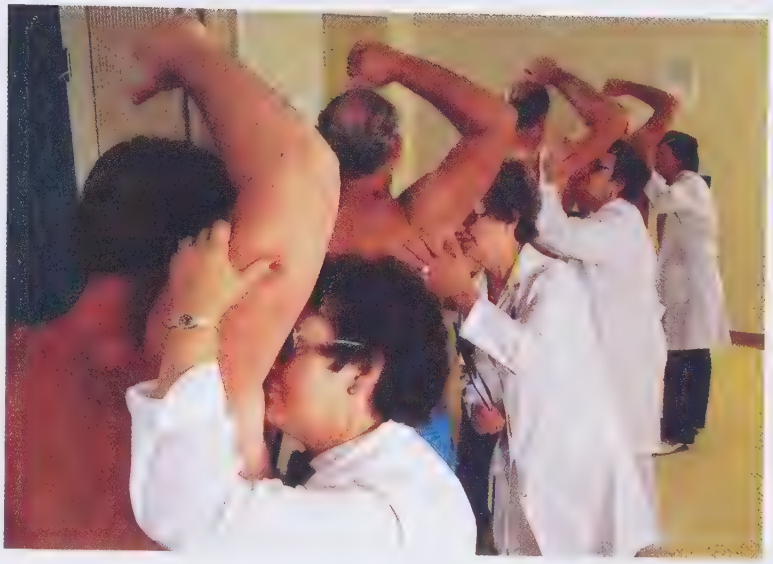

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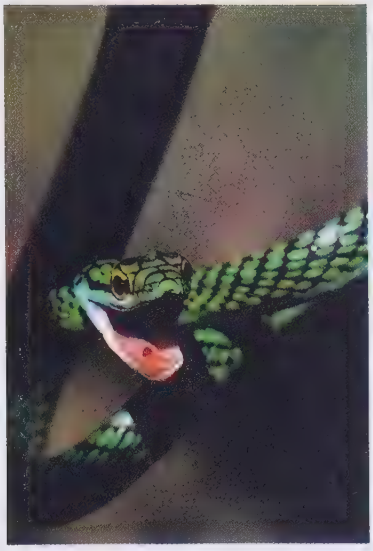

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Though he walks unarmed in his village, a Solomon Islander from Ulawa carries spears as a precaution on a shoreside excursion in the early 1900s. J. W. BEATTIE

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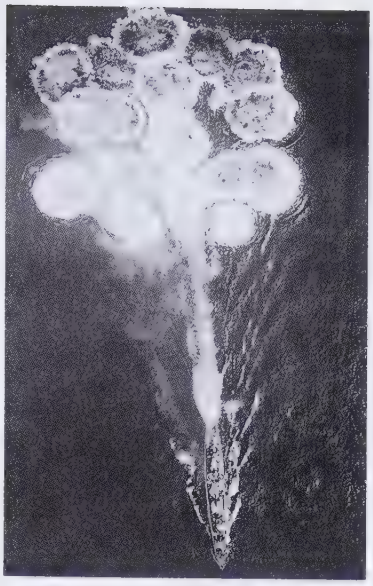

U.S. destroyer of the 1950s lays depth charges that could have sunk a submarine located by sonar. U.S. NAVY, OFFICIAL

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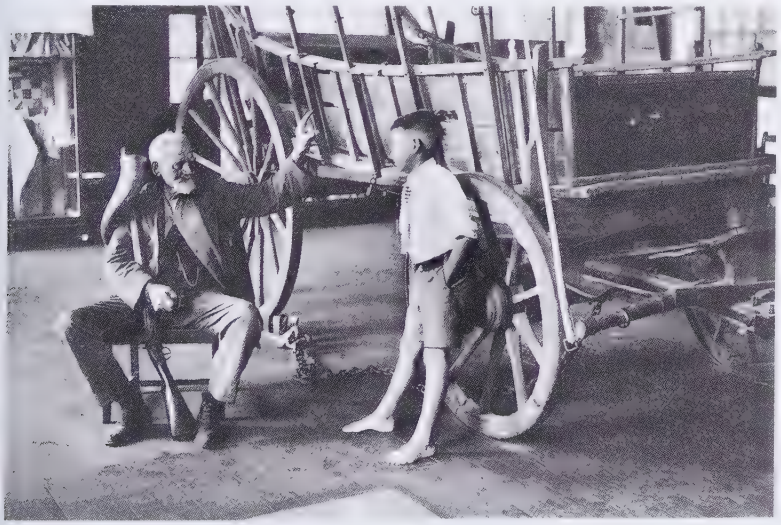

Around 1930 a young South African listens to an old timer in a museum as he leans against a wagon used by the Boers in their Great Trek of the mid-1800s. MELV LLE CHATER

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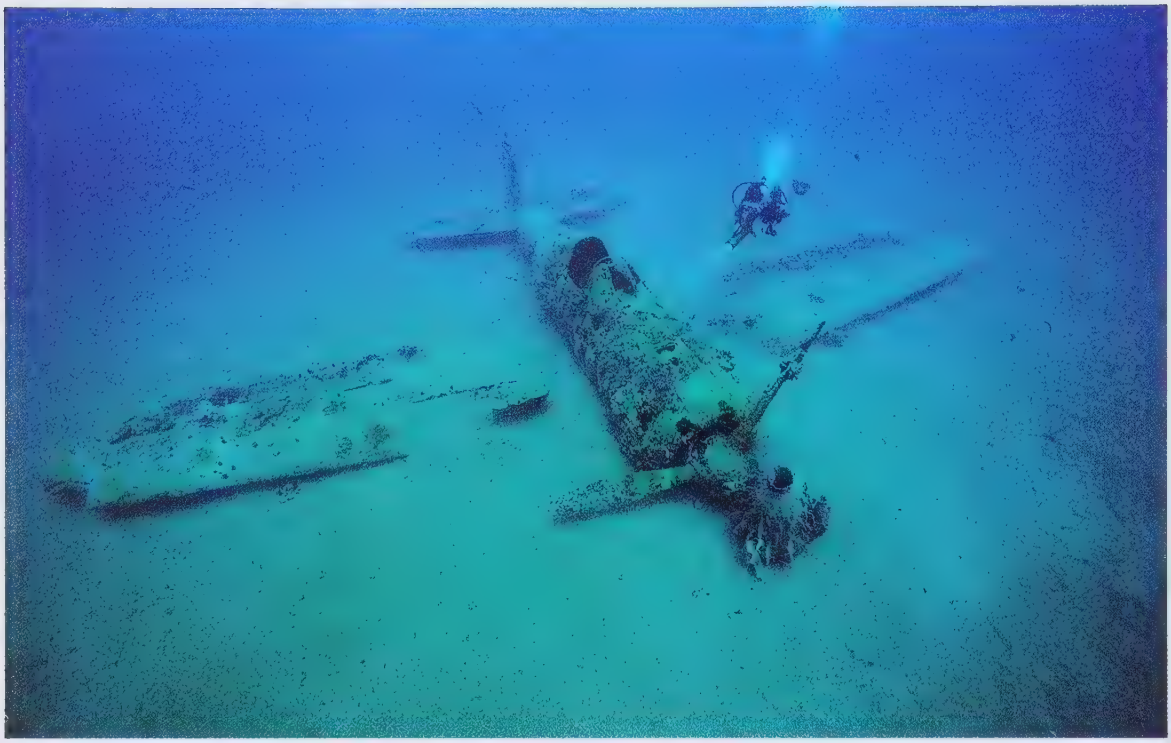

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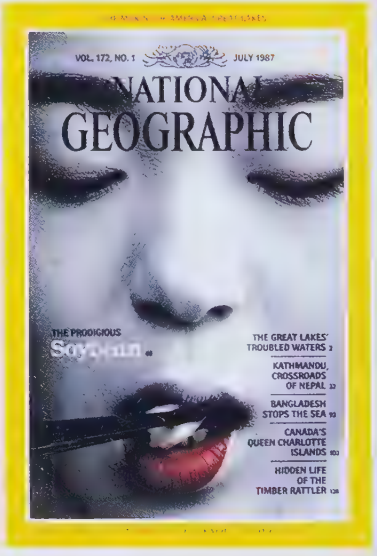

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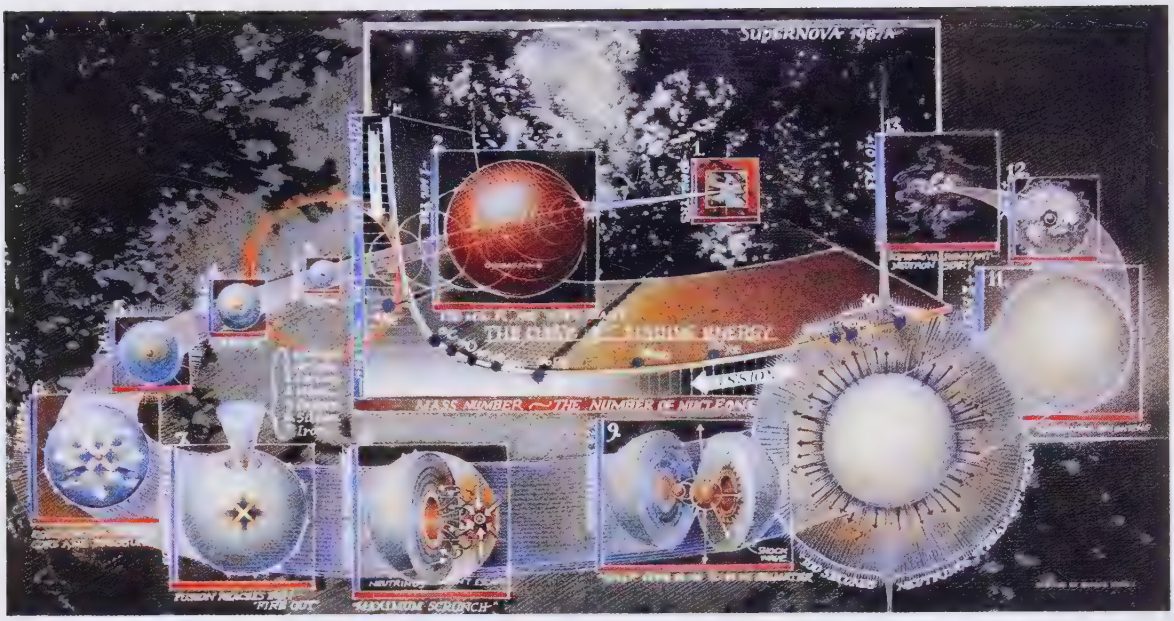

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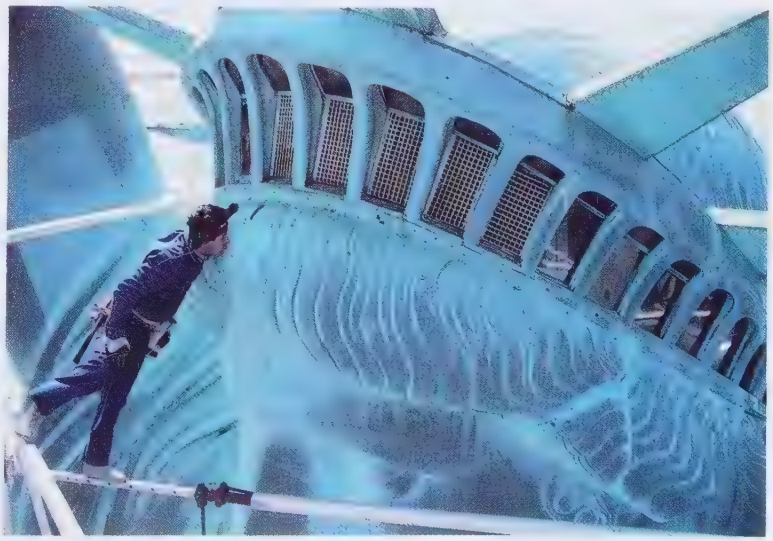

The object of great affection, the Statue of Liberty gets a kiss from Tony Soraci, who helped erect scaffolding for her restoration. KONI NORDMANN, CONTACT PRESS IMAGES

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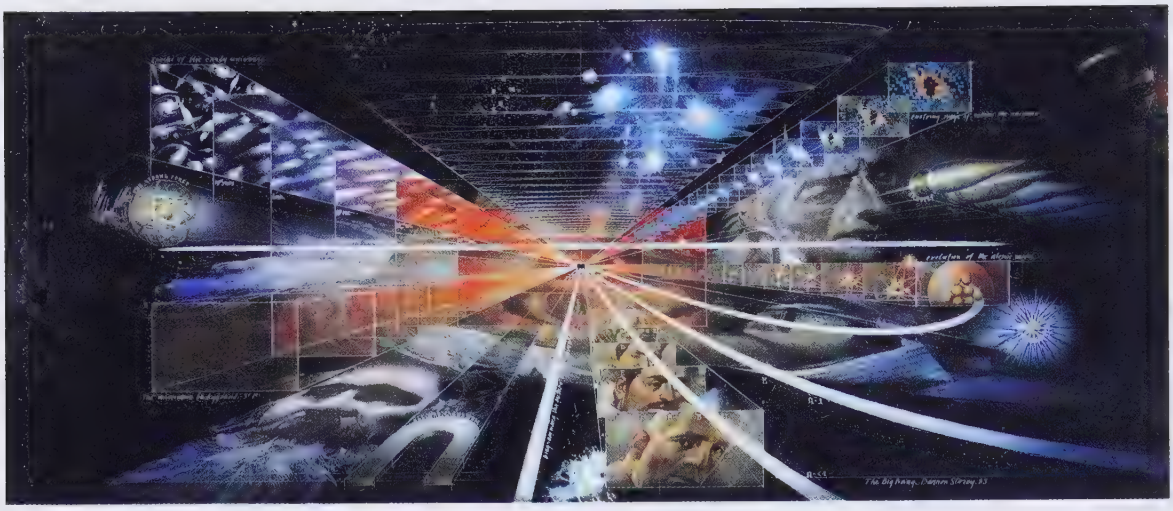

Illustration of the big bang theory portrays famous scientists and the explosion that created our universe. PAINTING BY BARRON STOREY

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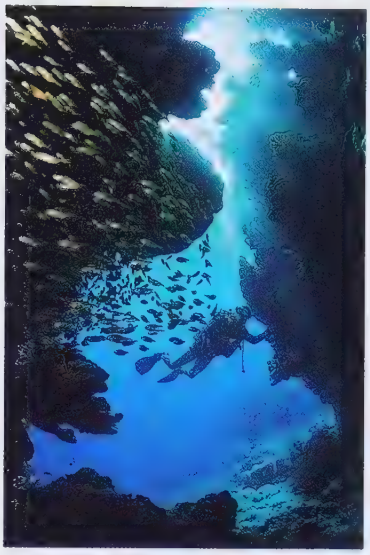

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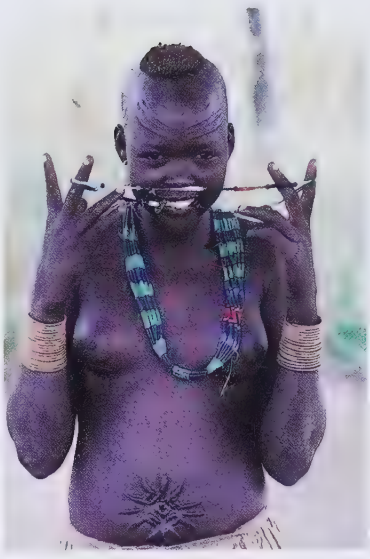

A south Sudanese woman displays the traditional scarification and haircut of the isolated Mondari tribe. ROBERT CAPUTO

SUGAR, JAMES A.:
On Assignment. *June 1983*
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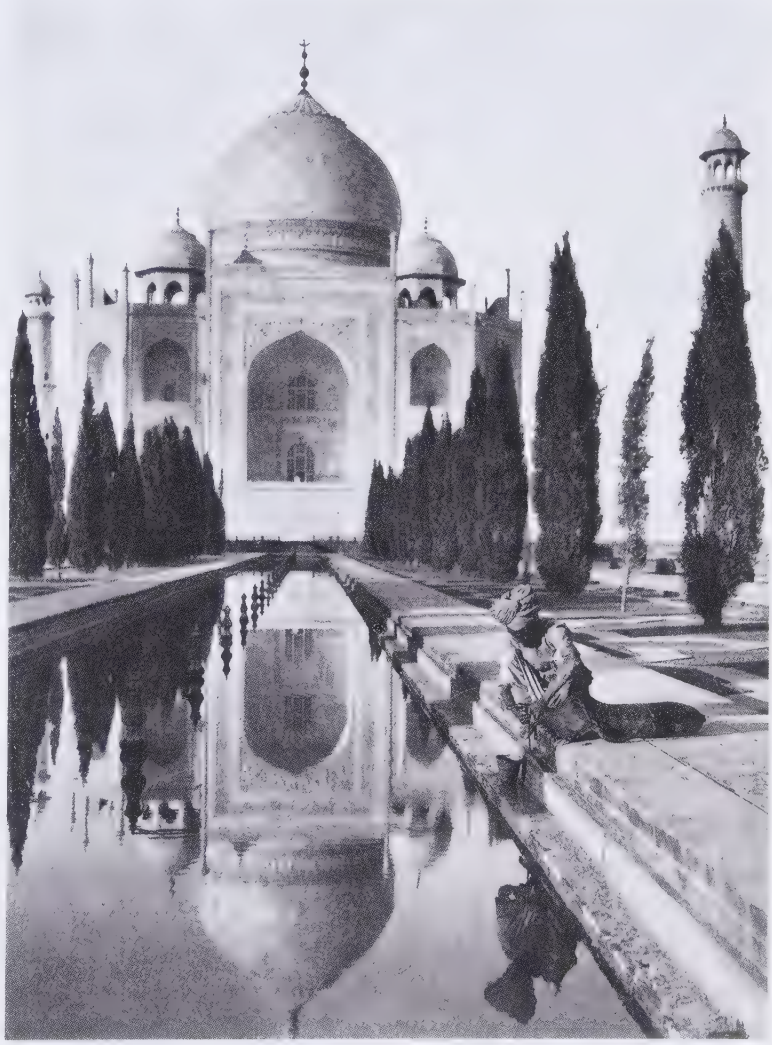
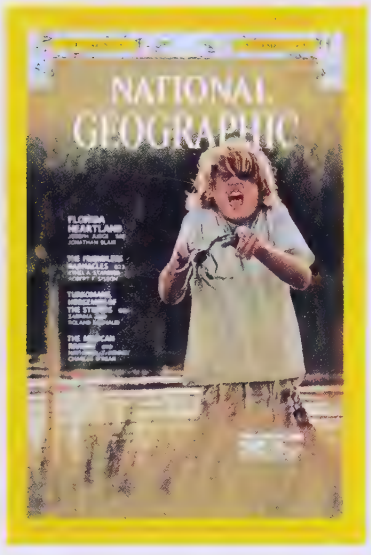


Above a pool's reflection of perfection stands the Taj Mahal, begun by Mogul Emperor Shah Jahan near Agra in 1632 and completed 22 years later. MAYNARD OWEN WILLIAMS, NGS



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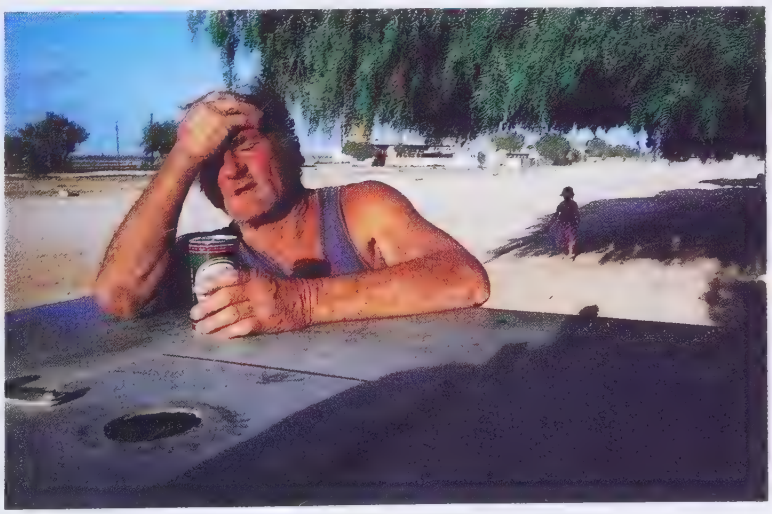

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Halley's Comet 1986. By Rick Gore. 758-785, *Dec. 1986*
The Once and Future Universe. By Rick Gore. Photos by James A. Sugar. Paintings by Barron Storey. Picture text by David Jeffery. 704-749, *June 1983*
The Incredible Universe. By Kenneth F. Weaver. Photos by James P. Blair. 589-625, *May 1974*
Pioneers in Man's Search for the Universe. Paintings by Jean-Leon Huens. Text by Thomas Y. Canby. 627-633, *May 1974*
First Photographs of Planets and Moon Taken with Palomar's 200-inch Telescope. By Milton L. Humason. 125-130, *Jan. 1953*
Mapping the Unknown Universe. By F. Barrows Colton. Included: "Big Schmidt" and the 200-inch Hale telescope or "Big Eye." NGS research grant. 401-420, *Sept. 1950*
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Exploring the Glories of the Firmament. By William Joseph Showalter. 153-181, *Aug. 1919*
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TELEVISION:
New Miracles of the Telephone Age. By Robert Leslie Conly. 87-120, *July 1954*
Fish Men Discover a 2,200-year-old Greek Ship. By Jacques-Yves Cousteau. NGS research grant. 1-36, *Jan. 1954*
Your Society Observes Eclipse in Brazil. NGS research grant. 661, *May 1947*
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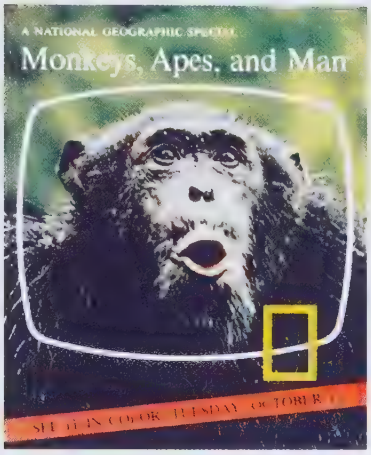
TELEVISION FILMS, NGS:
History. President's Page. By Gilbert M. Grosvenor. *Sept. 1988*
Foreign-language versions. President's

Telephone engineers developed picture-by-wire systems in the 1930s to transmit photographs. J. BAYLOR ROBERTS, NGS



Hugo the chimpanzee hoots a greeting to another Tanzanian ape, a scene recorded in a 1971 TV documentary.

Page. By Gilbert M. Grosvenor. *July 1988*
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National Geographic's Newest Adventure: a Color Television Series. By Melville Bell Grosvenor. Note: The first program was "Americans on Everest." 448-452, *Sept. 1965*

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Emmy. 731, Dec. 1974; 1, Jan. 1979; 848, 850, Dec. 1981; 275, *Aug. 1982*
George Foster Peabody Award. 587, Oct. 1967; 848, 850, *Dec. 1981*

Editorials
Editorial. By Wilbur E. Garrett. 703, *Dec. 1980*
Editorials. By Gilbert M. Grosvenor. 731, Dec. 1974; 299, Sept. 1975; 583, Nov. 1975; 575, Nov. 1976; 439, Oct. 1977; 1, Jan. 1979; 1, *Jan. 1980*

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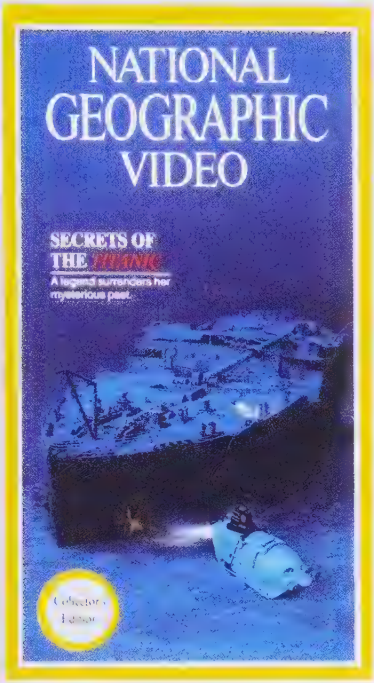
Specials (S) and Videos (V)
African Odyssey (S). cover, *Jan. 1988*
Alaska! (S). 215A-215B, *Feb. 1967*
Amazon (S). 295A-295B, *Feb. 1968*
Americans on Everest (S). 448-452, Sept. 1965; 575, Nov. 1976; President's Page. *Jan. 1985*
America's Wonderlands: The National Parks (S). 549A-549B, *Oct. 1968*
Among the Wild Chimpanzees (S, V). cover, *Jan. 1984*
The Animals Nobody Loved (S). cover, *Feb. 1976*
Australia: The Timeless Land (S). 300A-300B, *Feb. 1969*
Australia's Animal Mysteries (S). 824, Dec. 1982; cover, *Feb. 1983*
Australia's Improbable Animals (V). *1988*
Australia's Twilight of the Dreamtime (S). 270, cover, *Feb. 1988*
Ballad of the Irish Horse (S, V). cover, *Mar. 1985*
The Big Cats (S). 442A, *Mar. 1974*
Born of Fire (S, V). 824, Dec. 1982; cover, *Apr. 1983*
Bushmen of the Kalahari (S). 578A-578B, Apr. 1973; 732A-732B, *May 1974*
Chesapeake Borne (S). President's Page; cover, *Jan. 1986*
Creatures of the Mangrove (S, V). President's Page. Jan. 1986; cover, *Feb. 1986*
Dive to the Edge of Creation (S). Contents: Galapagos Rift expedition. 682, Nov. 1979; 1, cover, *Jan. 1980*
Dr. Leakey and the Dawn of Man (S). 703A-703B, *Nov. 1966*
Egypt: Quest for Eternity (S, V). cover, *Feb. 1982*
Ethiopia: The Hidden Empire (S). 884A-884B, *Dec. 1970*
Etosha: Place of Dry Water (S, V). Note: Video retitled African Wildlife. 703, Dec. 1980; cover, *Jan. 1981*
The Explorers: A Century of Discovery (S, V). 316, Sept. 1988; cover, *Oct. 1988*
Flight of the Whooping Crane (S). President's Page; cover, *Apr. 1984*
Four Americans in China (S). cover, *Feb. 1985*
Gold! (S). 1, cover, *Jan. 1979*
Gorilla (S, V). 703, Dec. 1980; cover, *Apr. 1981*
The Great Mojave Desert (S). 294A-294B, *Feb. 1971*
Great Moments With National Geographic (S). President's Page; cover, *Mar. 1985*
The Great Whales (S, V). 439, Oct. 1977; cover, Feb. 1978; Emmy Award. 1, *Jan. 1979*
The Grizzlies (S, V). President's Page. Jan. 1987; cover, *Mar. 1987*
Grizzly! (S). 639A-639B, *Nov. 1967*
The Haunted West (S). *Apr. 1973*
The Hidden World (S). 853A-853B, *Dec. 1966*
Himalayan River Run (V). *1988*
Holland Against the Sea (S). 588A-588B, *Apr. 1970*
Hong Kong: A Family Portrait (S). 1, Jan. 1979; cover, *Feb. 1979*
Iceland River Challenge (V). *1986*
In the Shadow of Vesuvius (S, V). President's Page. Jan. 1987; cover, *Feb. 1987*
The Incredible Machine (S, V). Note: Video retitled The Incredible Human Machine. 299, Sept. 1975; cover, Oct. 1975; 583, Nov. 1975; 575, Nov. 1976; President's Page. *Jan. 1985*
Inside the Soviet Circus (S). cover, *Mar. 1988*
The Invisible World (S, V). 1, Jan. 1980; cover, *Mar. 1980*
Jerusalem: Within These Walls (S, V). President's Page. Jan. 1986; cover, *Mar. 1986*
Journey to the High Arctic (S). 590A-590B, *Apr. 1971*
Journey to the Outer Limits (S). 150A-150B, *Jan. 1974*
Land of the Tiger (S, V). 754, Dec. 1984; President's Page; cover, *Jan. 1985*
Last Stand in Eden (S). 1, Jan. 1979; cover, *Mar. 1979*
The Last Tribes of Mindanao (S). 882A-882B, Dec. 1971; 227, *Aug. 1972*
The Last Vikings (S). 434A-434B, *Mar. 1972*
The Legacy of L.S.B. Leakey (S). 439, Oct. 1977; cover, *Jan. 1978*
Lions of the African Night (S, V). President's Page. Jan. 1987; cover, *Jan. 1987*
The Living Sands of Namib (S, V). Note: Video retitled Creatures of the Namib Desert. 439, Oct. 1977; cover, Mar. 1978; 1, *Jan. 1979*
Living Treasures of Japan (S, V). 703, Dec. 1980; cover, *Feb. 1981*
The Lonely Dorymen (S). 579A-579B, *Apr. 1968*
Love Those Trains (S). cover, *Feb. 1984*
Man-eaters of India (V). *1987*
Man of the Serengeti (S). 179A-179B, *Feb. 1972*
Miraculous Machines (S, V). Note: Video retitled Miniature Miracle: The Computer Chip. cover, *Apr. 1985*
Miss Goodall and the Wild Chimpanzees (S). 448, 451, Sept. 1965; 831A-831B, *Dec. 1965*
Monkeys, Apes, and Man (S). 585A-585B, *Oct. 1971*
Mysteries of Mankind (S). cover, *Apr. 1988*
Mysteries of the Mind (S). 1, Jan. 1980; cover, *Feb. 1980*
The Mystery of Animal Behavior (S). 592A-592B, *Oct. 1969*

NATIONAL GEOGRAPHIC VIDEO
THE EXPLORERS
A CENTURY OF DISCOVERY
One hundred years of spectacular history-making expeditions.



National Parks: Playground or Paradise (S). 703, Dec. 1980; cover, *Mar. 1981*
The New Indians (S). 575, Nov. 1976; cover, *Feb. 1977*
Polar Bear Alert (S, V). 395, *Mar. 1982*
Polynesian Adventure (S). 592A-592B, *Apr. 1969*
Rain Forest (S, V). 824, Dec. 1982; 49, cover, *Jan. 1983*
Realm of the Alligator (S, V). President's Page. Jan. 1986; cover, *Apr. 1986*
Reptiles and Amphibians (S). 875A-875B, *Dec. 1968*
Return to Everest (S). cover, *Mar. 1984*
The Rhino War (V). *1988*
Rocky Mountain Beaver Pond (V). *1987*
Save the Panda (S, V). 824, Dec. 1982; cover, *Mar. 1983*
Search for the Great Apes (S). cover, *Jan. 1976*
The Secret Leopard (V). *1988*
Secrets of the *Titanic* (V). President's Page. *Jan. 1987*
The Sharks (S, V). cover, Jan. 1982; President's Page. *Jan. 1985*
Siberia: The Endless Horizon (S). 734A-734B, *Nov. 1969*
Strange Creatures of the Night (S). 144A-144B, *Jan. 1973*
The Superliners: Twilight of an Era (S, V). 1, Jan. 1980; cover, *Apr. 1980*
The Thames (S). cover, *Apr. 1982*
This Britain (S). 583, Nov. 1975; cover, *Dec. 1975*
The *Tigris* Expedition (S). 826, Dec. 1978; 1, Jan. 1979; cover, *Apr. 1979*
Treasure! (S, V). Note: Video retitled Atocha: Quest for Treasure. 575, Nov. 1976; cover, *Dec. 1976*
Treasures from the Past (S). President's Page. By Gilbert M. Grosvenor. Jan. 1987; cover, *Apr. 1987*
Tropical Kingdom of Belize (V). *1987*
The Violent Earth (S). 286A-286B, *Feb. 1973*
The Volga (S). 575, Nov. 1976; cover, *Mar. 1977*
Voyage of the Brigantine *Yankee* (S). 449, 451, Sept. 1965; 265A-265B, *Feb. 1966*
Voyage of the *Hokule'a* (S). 575, Nov. 1976; cover, *Jan. 1977*
Wild River (S). 239A-239B, *Feb. 1970*
Wind Raiders of the Sahara (S). 436A-436B, *Sept. 1973*
Winged World (S). 877A, *Dec. 1967*
The World of Jacques-Yves Cousteau (S). 449, 451, Sept. 1965; 529A-529B, *Apr. 1966*
Yankee Sails Across Europe (S). 469A-469B, *Apr. 1967*
Yukon Passage (S, V). 439, Oct. 1977; cover, *Dec. 1977*
Zoos of the World (S). 503A-503B, *Oct. 1970*

TELL EL-KHELEIFEH (Ezion-geber), Jordan:

On the Trail of King Solomon's Mines: The Bible, in Addition to Its Spiritual Values, Continues to Prove a Rich Geography and Guide to Exploration of the Holy Land. By Nelson Glueck. 233-256, *Feb. 1944*

TELL EL MUTASALLIM, Israel. *See* Megiddo

TELL MARDIKH EXCAVATION, Syria:

Ebla: Splendor of an Unknown Empire. By Howard La Fay. Photos by James L. Stanfield. Paintings by Louis S. Glanzman. 730-759, *Dec. 1978*

"**TELL** me if your civilization is interesting": Those Electrifying Eighteen Eighties When the National Geographic Society Was Born. By William H. Goetzmann. Illustrated by Fred Otnes. 8-37, *Jan. 1988*

TELSTAR (Satellite):

Telephone a Star: the Story of Communications Satellites. By Rowe Findley. 638-651, *May 1962*

TEMPERATURE:

Climatic Conditions of Alaska. By A. W. Greely. 132-137, *Apr. 1898*
Laws of Temperature Control of the Geographic Distribution of Terrestrial Animals and Plants. Annual Address by Vice-President C. Hart Merriam. 229-238, *Dec. 29, 1894*
Relations of Air and Water to Temperature and Life. By Gardiner G. Hubbard. 112-124, *Jan. 31, 1894*

TEMPLE CAVES:

Himalayan Pilgrimage. By Christopher Rand. 520-535, *Oct. 1956*
India's Sculptured Temple Caves. By Volkmar Wentzel. 665-678, *May 1953*
The Caves of the Thousand Buddhas. By Franc and Jean Shor. 383-415, *Mar. 1951*
China's Great Wall of Sculpture: Manhewn Caves and Countless Images Form a Colossal Art Wonder of Early Buddhism. By Mary Augusta Mullikin. Paintings by author and Anna M. Hotchkis. 313-348, *Mar. 1938*
A Pilgrimage to Amernath, Himalayan Shrine of the Hindu Faith. By Louise Ahl Jessop. 513-542, *Nov. 1921*

TEMPLE Monkeys of Nepal. By Jane Teas. NGS research grant. 575-584, *Apr. 1980*

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Who Were the "Mound Builders"? By George E. Stuart. 783-801, *Dec. 1972*
Indians of the Southeastern United States. By Matthew W. Stirling. Paintings by W. Langdon Kihn. 53-74, *Jan. 1946*

TEMPLES:

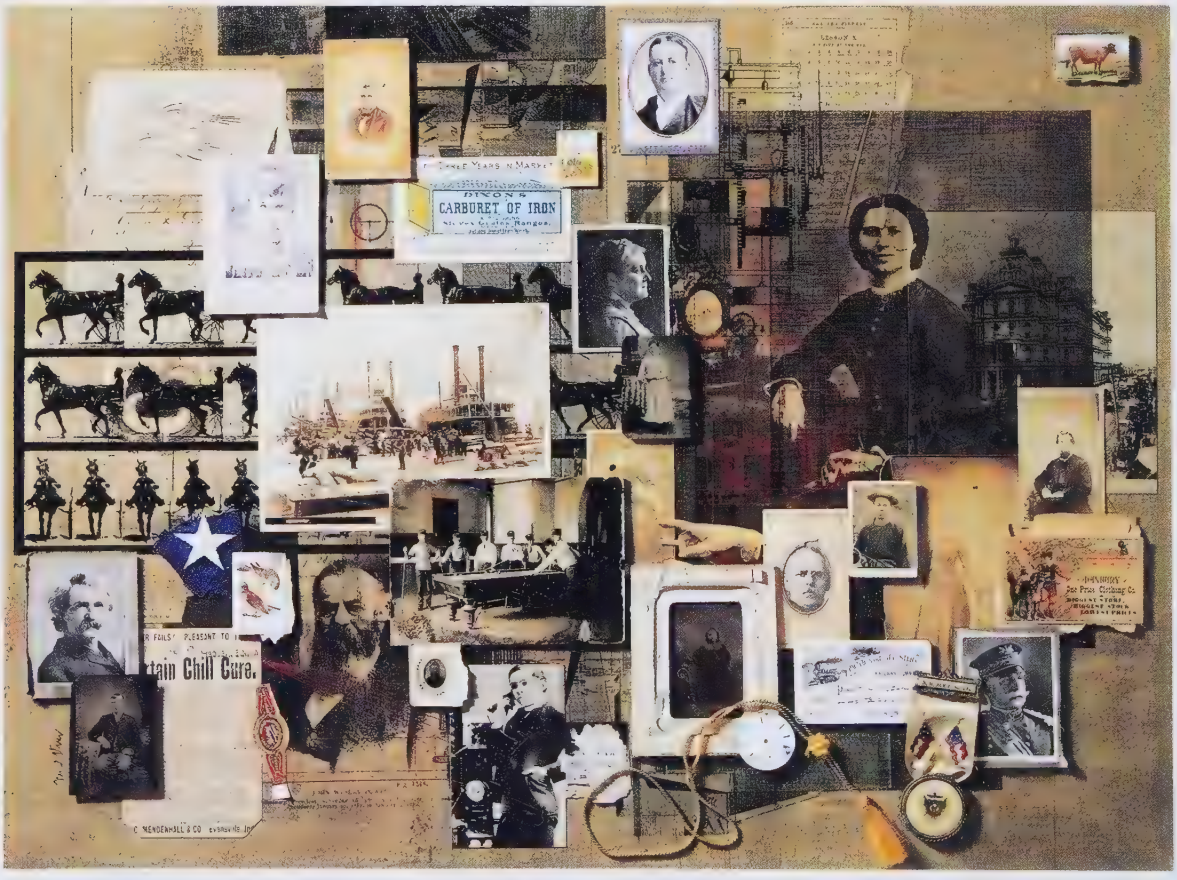
Indonesia Rescues Ancient Borobudur. By W. Brown Morton III. Photos by Dean Conger. 126-142, *Jan. 1983*
The Temples of Angkor. 548-589. I. Will They Survive? Introduction by Wilbur E. Garrett. 548-551; II. Ancient Glory in Stone. By Peter T. White. Photos by Wilbur E. Garrett. 552-589, *May 1982*
Drama of Death in a Minoan Temple. By Yannis Sakellarakis and Efi Sapouna-Sakellaraki. Photos by Otis Imboden and Spyros Tsavdaroglou. 205-222, *Feb. 1981*
The Aztecs. 704-775. I. The Aztecs. By Bart McDowell. Photos by David Hiser. Paintings by Felipe Dávalos. 714-751; II. The Building of Tenochtitlan. By Augusto F. Molina Montes. Paintings by Felipe Dávalos. 753-765; III. New Finds in the Great Temple. By Eduardo Matos Moctezuma. Photos by David Hiser. 767-775, *Dec. 1980*

❄ *Visitor's Guide to the Aztec World: Mexico and Central America. Dec. 1980*
Man's Eighty Centuries in Veracruz. By S. Jeffrey K. Wilkerson. Photos by David Hiser. Paintings by Richard Schlecht. Contents: El Tajín. 203-231, *Aug. 1980*
Temple Monkeys of Nepal. By Jane Teas. Included: Pashupati Hindu temple, Swayambhu Buddhist temple. NGS research grant. 575-584, *Apr. 1980*
Kyoto and Nara: Keepers of Japan's Past. By Charles McCarry. Photos by George F. Mobley. Included: Kyoto Says Happy New Year. Contents: Chion-in, Daisen-in, Daitoku-ji, Gyokurin-in, Heian Shrine, Jinko-in, Todai-ji, To-ji. 836-859, *June 1976*
Computer Helps Scholars Re-create an Egyptian Temple. By Ray Winfield Smith. Photos by Emory Kristof. NGS research grant. 634-655, *Nov. 1970*
Thailand Bolsters Its Freedom. By W. Robert Moore. 811-849, *June 1961*
Republican Indonesia Tries Its Wings. By W. Robert Moore. Included: Borobudur, Prambanan, Temple of Agriculture, and Temple of Irrigation. 1-40, *Jan. 1951*
"Pyramids" of the New World. By Neil Merton Judd. 105-128, *Jan. 1948*
Puto, the Enchanted Island. By Robert F. Fitch. 373-384, *Mar. 1946*
Tai Shan, Sacred Mountain of the East (China). By Mary Augusta Mullikin. 699-719, *June 1945*
Peiping's Happy New Year: Lunar Celebration Attracts Throngs to Temple Fairs, Motley Bazaars, and Age-old Festivities. By George Kin Leung. 749-792, *Dec. 1936*
Temples and Ceremonies of Kaleidoscopic Bangkok. Photos by Amos Burg, Gervais Courtellemont, and W. Robert Moore. 547-554, *May 1934*
The Five Thousand Temples of Pagān: Burma's Sacred City Is a Place of Enchantment in the Midst of Ruins. By William H. Roberts. 445-454, *Oct. 1931*
Chichen Itzá, an Ancient American Mecca: Recent Excavations in Yucatan Are Bringing to Light the Temples, Palaces, and Pyramids of America's Most Holy Native City. By Sylvanus Griswold Morley. 63-95, *Jan. 1925*
"The Glory That Was Greece." By Alexander Wilbourne Weddell. 571-630, *Dec. 1922*
The Marble Dams of Rajputana. By Eleanor Maddock. 469-499, *Nov. 1921*
Malta: The Halting Place of Nations: First Account of Remarkable Prehistoric Tombs and Temples Recently Unearthed on the Island. By William Arthur Griffiths. 445-478, *May 1920*
The Home of a Forgotten Race: Mysterious Chichen Itza. By Edward H. Thompson. 585-648, *June 1914*
Note on excavations at Quirigua, Guatemala. 1056, *Sept. 1913*
Excavations at Quirigua, Guatemala. By Sylvanus Griswold Morley. 339-361, *Mar. 1913*
Mysterious Temples of the Jungle: The Prehistoric Ruins of Guatemala. By W. F. Sands. 325-338, *Mar. 1913*
The Temples of India. Photos by W. M. Zumbro. 922-971, *Nov. 1909*
The Madura Temples. By J. S. Chandler. 218-222, *Mar. 1908*
See also Abu Simbel, Egypt; *and* Pagodas; Temple Caves; Temple Mounds

TEMPO and Color of a Great City. Contents: New York City. Photos by Clifton Adams and Edwin L. Wisherd. 539-578, *Nov. 1930*

The **TEN** Thousand Smokes Now a National Monument: The President of the United States Sets Aside for the American People the Extraordinary Valley Discovered and Explored by the National Geographic Society. 359-366, *Apr. 1919*

TEN Years in the Philippines. By



Tokens of the late 1800s illustrated the Society's centennial-year story "Tell Me If Your Civilization Is Interesting." FRED OTNES

William Howard Taft. 141-148, *Feb. 1908*

TEN Years of the Peary Arctic Club. By Herbert L. Bridgman. 661-668, *Sept. 1908*

TENNESSEE:

Rising, Shining Tennessee. By Priit J. Vesilind. Photos by Karen Kasmauski. 602-637, *May 1986*

Deep South, The Making of America series. Included: Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and parts of Arkansas, North Carolina, and Tennessee. On reverse: Indian Legacy, Imperial Footholds, Three Empires and Three Races, Cotton Kingdom, Postbellum, New Deep South, Subtropical Playground. *Aug. 1983*

Echoes of Shiloh. By Shelby Foote. 106-111, *July 1979*

There's More to Nashville than Music. By Michael Kernan. Photos by Jodi Cobb. 692-711, *May 1978*

A Walk Across America. By Peter Gorton Jenkins. 466-499, *Apr. 1977*

Whatever Happened to TVA? By Gordon Young. Photos by Emory Kristof. 830-863, *June 1973*

Today Along the Natchez Trace, Pathway Through History. By Bern Keating. Photos by Charles Harbutt. 641-667, *Nov. 1968*

The People of Cades Cove. By William O. Douglas. Photos by Thomas Nebbia and Otis Imboden. 60-95, *July 1962*

The Lower Mississippi. By Willard Price. Photos by W. D. Vaughn. 681-725, *Nov. 1960*

Rhododendron Time on Roan Mountain. By Ralph Gray. 819-828, *June 1957*

Pack Trip Through the Smokies. By Val Hart. Photos by Robert F. Sisson. 473-502, *Oct. 1952*

Skyline Trail from Maine to Georgia. By Andrew H. Brown. Photos by Robert F. Sisson. 219-251, *Aug. 1949*

Dixie Spins the Wheel of Industry. By William H. Nicholas. Photos by J. Baylor Roberts. 281-324, *Mar. 1949*

Around the "Great Lakes of the South." By Frederick Simpich. Photos by J. Baylor Roberts. 463-491, *Apr. 1948*

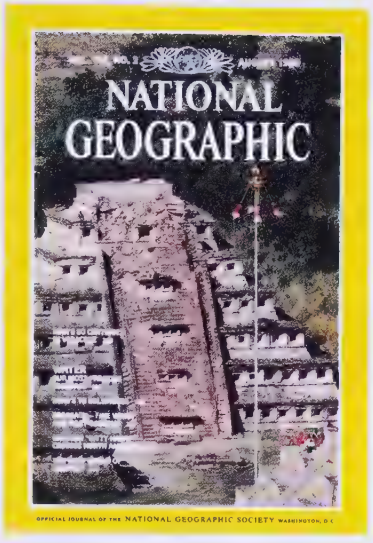
Highlights of the Volunteer State: Men and Industry in Tennessee Range from Pioneer Stages to Modern Machine Age. By Leonard Cornell Roy. Included: Tennessee Tableaux. Photos by J. Baylor Roberts. 553-594, *May 1939*

Rambling Around the Roof of Eastern America. By Leonard C. Roy. Contents: Great Smoky Mountains. 243-266, *Aug. 1936*

North Carolina, South Carolina, Georgia, and Eastern Tennessee. Sept. 1926

Reelfoot–An Earthquake Lake. By Wilbur A. Nelson. 95-114, *Jan. 1924*

North Carolina-Tennessee: Asheville Sheet. Section from the Cumberland Plateau to the Blue Ridge. Surveyed in 1882-3-7. Note: Reprinted 1965 as



Asheville Quadrangle. Surveyed in 1898-99. *Oct. 1889*

See also Cumberland Gap; Great Smoky Mountains National Park; Oak Ridge

TENNESSEE (Battleship):

Victory's Portrait in the Marianas. By William Franklin Draper. Paintings by author. 599-616, *Nov. 1945*

TENNESSEE–TOMBIGBEE WATERWAY, Mississippi-Alabama:

The Tennessee-Tombigbee Waterway: Bounty or Boondoggle? By Carolyn Bennett Patterson. Photos by Sandy Felsenthal. Included: The Hidden Tenn-Tom: Bypassed But Still Striving. By Alice J. Hall. 364-387, *Mar. 1986*

TENNESSEE VALLEY AUTHORITY:

Whatever Happened to TVA? By Gordon Young. Photos by Emory Kristof. 830-863, *June 1973*

Around the "Great Lakes of the South." By Frederick Simpich. Photos by J. Baylor Roberts. 463-491, *Apr. 1948*

TENOC (Ten-year Oceanographic Program). *See* National Oceanographic Program

TENOCHTITLAN (Aztec Capital):

Following Cortés: Path to Conquest. By S. Jeffrey K. Wilkerson. Photos by Guillermo Aldana E. Paintings by Ned Seidler and Rosalie Seidler. 420-459, *Oct. 1984*

The Aztecs. 704-775. I. The Aztecs. By Bart McDowell. Photos by David Hiser. Paintings by Felipe Dávalos. 714-751; II. The Building of Tenochtitlan. By Augusto F. Molina Montes. Paintings by Felipe Dávalos. 753-765; III. New Finds in the Great Temple. By Eduardo Matos Moctezuma. Photos by David Hiser. 767-775, *Dec. 1980*

Visitor's Guide to the Aztec World; Mexico and Central America. Dec. 1980

TENOS (Island), Aegean Sea:

The Isles of Greece. By Richard Stillwell. 593-622, *May 1944*

TENZING NORGAY:

President Eisenhower Presents the Hubbard Medal to Everest's Conquerors. 64, *July 1954*

Triumph on Everest. 1-63. I. Siege and Assault. By Sir John Hunt. 1-43; II. The Conquest of the Summit. By Sir Edmund Hillary. 45-63, *July 1954*

TEOTIHUACÁN, Mexico:

South to Mexico City. By W. E. Garrett. 145-193, *Aug. 1968*

Mexico's Booming Capital. By Mason Sutherland. Photos by Justin Locke. 785-824, *Dec. 1951*

"Pyramids" of the New World. By Neil Merton Judd. 105-128, *Jan. 1948*

An Interesting Visit to the Ancient Pyramids of San Juan Teotihuacan. By A. C. Galloway. 1041-1050, *Dec. 1910*

TEPARY BEANS:

Rediscovering America's Forgotten Crops. By Noel D. Vietmeyer. Photos by Burgess Blevins. Paintings by Paul M. Breeden. 702-712, *May 1981*

TEPE GAWRA (Archaeological Site), Iraq:

Ancient Mesopotamia: A Light That Did Not Fail. By E. A. Speiser. Paintings by H. M. Herget. 41-105, *Jan. 1951*

TER GOES, The Netherlands. *See* Goes

TERCEIRA (Island), Azores:

American Airmen in the Azores. 177-184, *Feb. 1946*

TEREDOS:

Shipworms, Saboteurs of the Sea. By F. G. Walton Smith. 559-566, *Oct. 1956*

TERINGO, J. ROBERT: *Artist*

Caesarea Maritima. By Robert L. Hohlfelder. Photos by Bill Curtsinger. NGS research grant. 261-279, *Feb. 1987*

TERMINATION Land. By Edwin Swift Balch. 220-221, *May 1904*

TERMITES:

Termites: Dwellers in the Dark. By Glenn D. Prestwich. 532-547, *Apr. 1978*

TERNATE (Island), Moluccas, Indonesia:

Yankee Roams the Orient. By Irving and Electa Johnson. 327-370, *Mar. 1951*

TERNS:

Friend of the Wind: The Common Tern. By Ian Nisbet. Photos by Hope Alexander. 234-247, *Aug. 1973*

What A Place to Lay an Egg! By Thomas R. Howell. Contents: Fairy terns.

NGS research grant. 414-419, *Sept. 1971*
Sea Birds of Isla Raza. By Lewis Wayne Walker. Included: Elegant terns; Royal terns. 239-248, *Feb. 1951*
Blizzard of Birds: The Tortugas Terns. By Alexander Sprunt, Jr. Included: Noddy terns; Sooty terns. 213-230, *Feb. 1947*
Fairy Terns of the Atolls. By Lewis Wayne Walker. 807-814, *Dec. 1946*
Pelican Profiles. By Lewis Wayne Walker. Included: The gull-billed tern of the Salton Sea area, California. 589-598, *Nov. 1943*

TERRA, HELLMUT DE: *Author*
On the World's Highest Plateaus: Through an Asiatic No Man's Land to the Desert of Ancient Cathay. 319-367, *Mar. 1931*

TERRA-COTTA ARMY:
China's Incredible Find. By Audrey Topping. Paintings by Yang Hsien-min. Included: The first emperor's burial mound, with guardian army of terra-cotta men and horses. 440-459, *Apr. 1978*

TERRANES:
Our Restless Planet Earth. By Rick Gore. Photos by James A. Sugar. Painting by Ned M. Seidler. Text by Larry Kohl. 142-181, *Aug. 1985*
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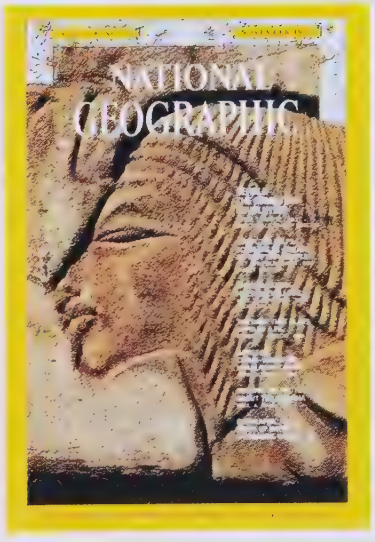

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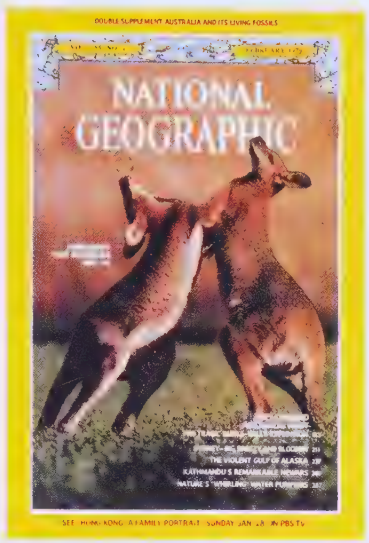

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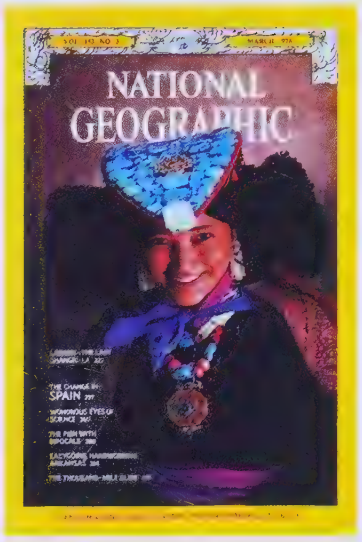

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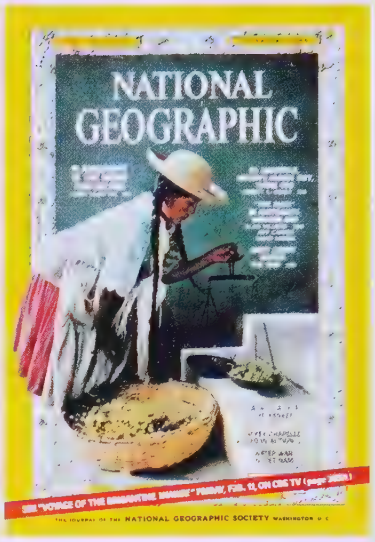

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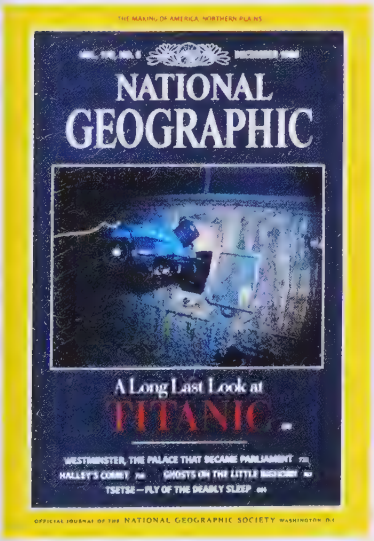

Robot records the manned submersible* Alvin *taking a last look at the sunken* Titanic *in 1986. ROBERT D. BALLARD AND MARTIN BOWEN, © WOODS HOLE OCEANOGRAPHIC INSTITUTION

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TOKYO:
Giant in motion
WORLD'S LARGEST CITY in the early 18th century (below), Edo contained 1.3 million people. With its castle now the Imperial Palace, the emperor's home, the old town is the hub of metropolitan Tokyo (right), with 12 million people shoehorned into 800 square miles. Toshima ku the most crowded ward, counts 57,200 per square mile.
The city's history is much more of the mind than the age. From hundreds of earthquakes and fires, typhoons and floods, Tokyoites have rebuilt, creating a numb no urban hodgepodge. Here and there green walls of oxidized copper testify to the prewar era in buildings that survived the catastrophic U.S. firebombing in 1945. It destroyed almost half the city and killed nearly 100,000. Today rebuilt, the city is laced together by an efficient subway system of ten lines totaling about 150 miles, as well as the 101 year-old Yamanote Line that loops central Tokyo.
KITA-KU
ARAKAWA-KU
TOSHIMA-KU
TAITO-KU
BUNKYO-KU
SUMIDA-KU
SHIN JUKU-KU
CHIYODA-KU
KOTO-KU
SHIBUYA-KU
CHUO-KU
MINATO-KU
MEGURO-KU
TOKYO HARBOR
Railroad, station
Expressway
Subway
Map represents central Tokyo

Old town of Edo, at left, and its castle, now the emperor's Imperial Palace, sit at the center of modern metropolitan Tokyo.

Tokyo, the Peaceful Explosion. By William Graves. Photos by Winfield Parks. 445-487, *Oct. 1964*
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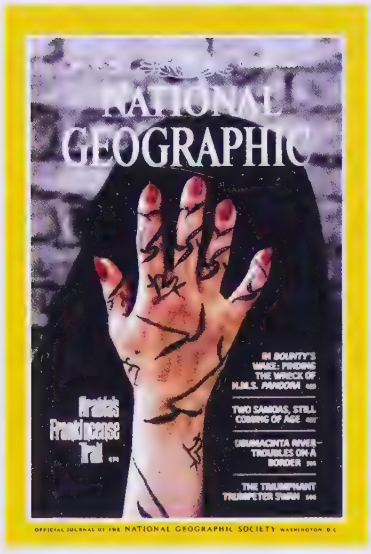
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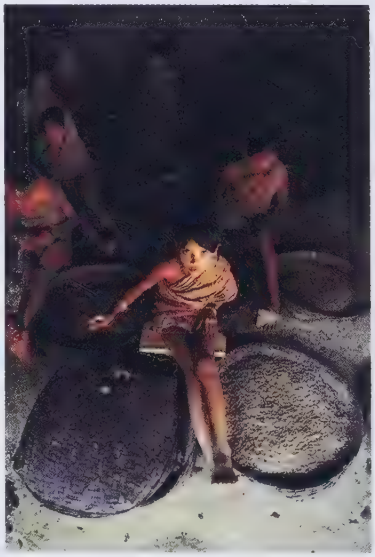

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With spring busting out all over, a robin guards his nest of chicks in a blossoming apple tree. ROBERT F. SISSON, NGS

On a Virginia hillside painted in spring's pastels an Angus cow and her calves stand under an apple tree that awaits the greening of its branches. ROBERT F. SISSON, NGS

This immense tree of the fig family was photographed in China in 1911 during a botanical expedition. E. H. WILSON, ARNOLD ARBORETUM

Longleaf (Alabama); Pine, Shortleaf (Arkansas); Piñon (New Mexico); Piñon, Singleleaf (Nevada); Redbud, Eastern (Oklahoma); Redwood, Coast (California); Spruce, Blue (Colorado, Utah); Tulip (Indiana, Kentucky, Tennessee); White Oak (Connecticut, Maryland). 508-552, *Oct. 1957*

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VESUVIUS
VICTORIA FALLS
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VIRGIN ISLANDS
VIRUNGA MOUNTAINS
VIRUSES
VOLCANOES
VOLGA
VOODOO
VOYAGER
VULTURES

In the South Pacific near New Hanover Island barracuda enchant both diver and photographer as they rotate in a slow ballet.

DAVID DOUBILET

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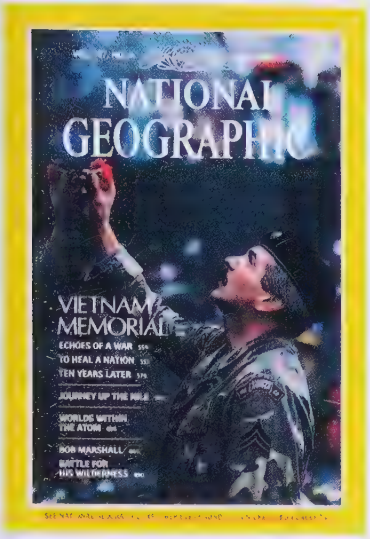

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At the end of a 4,751-mile, five-year walk across America, Peter and Barbara Jenkins near an Oregon beach in 1979. COTTON COULSON

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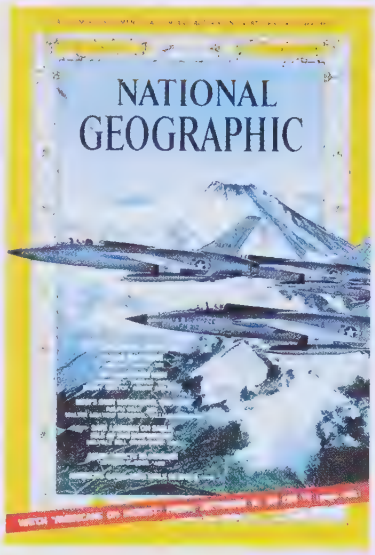

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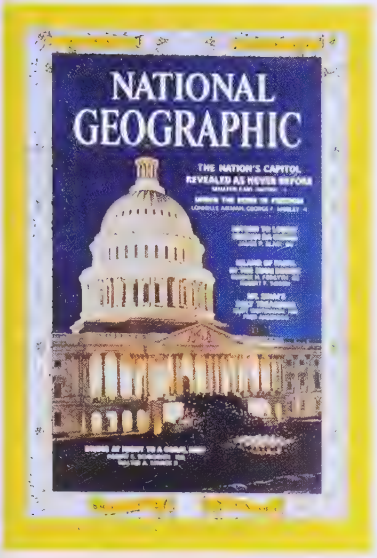
More Water for California's Great

Vietnamese gunman and Capt. Vernon Gillespie, of the U.S. Army Special Forces, flank a montagnard wounded in his people's fight for autonomy. HOWARD SOCHUREK



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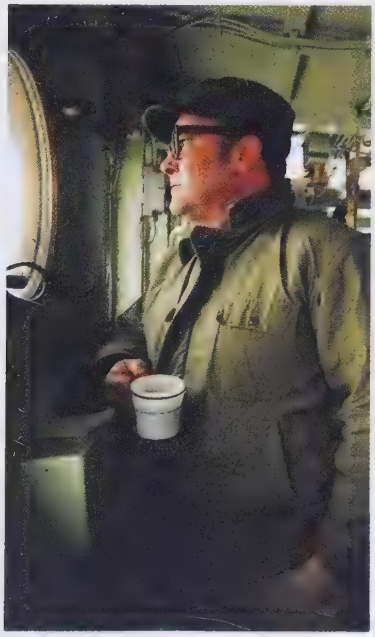

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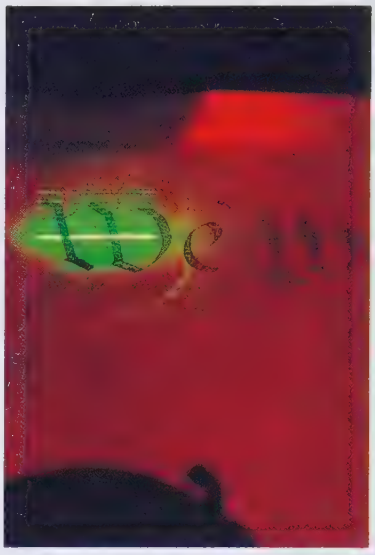

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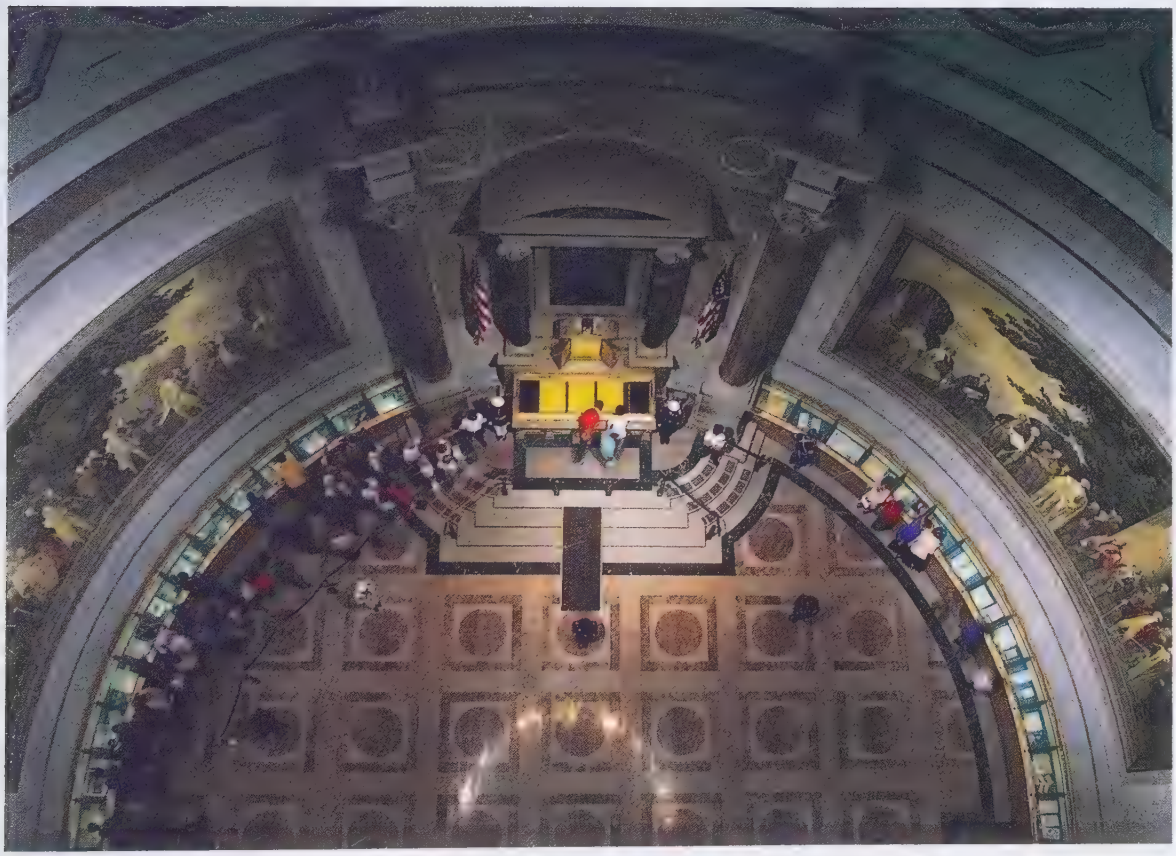

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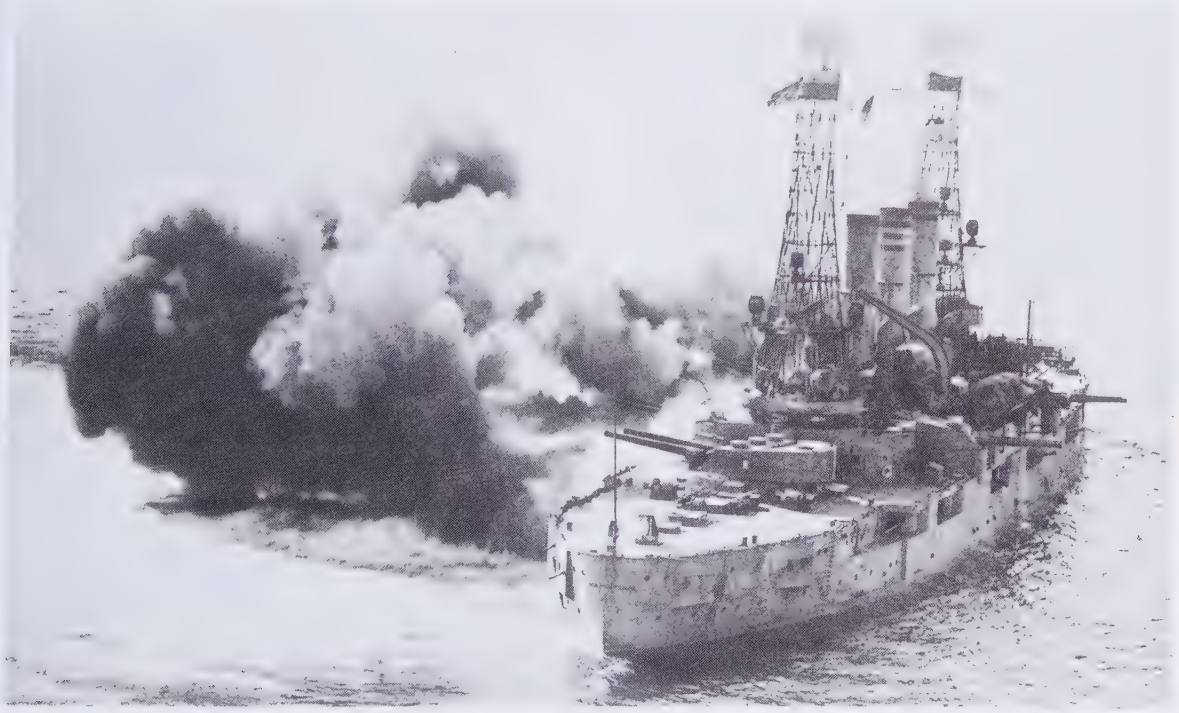

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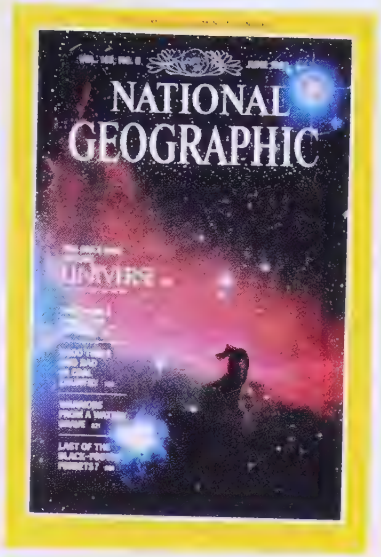

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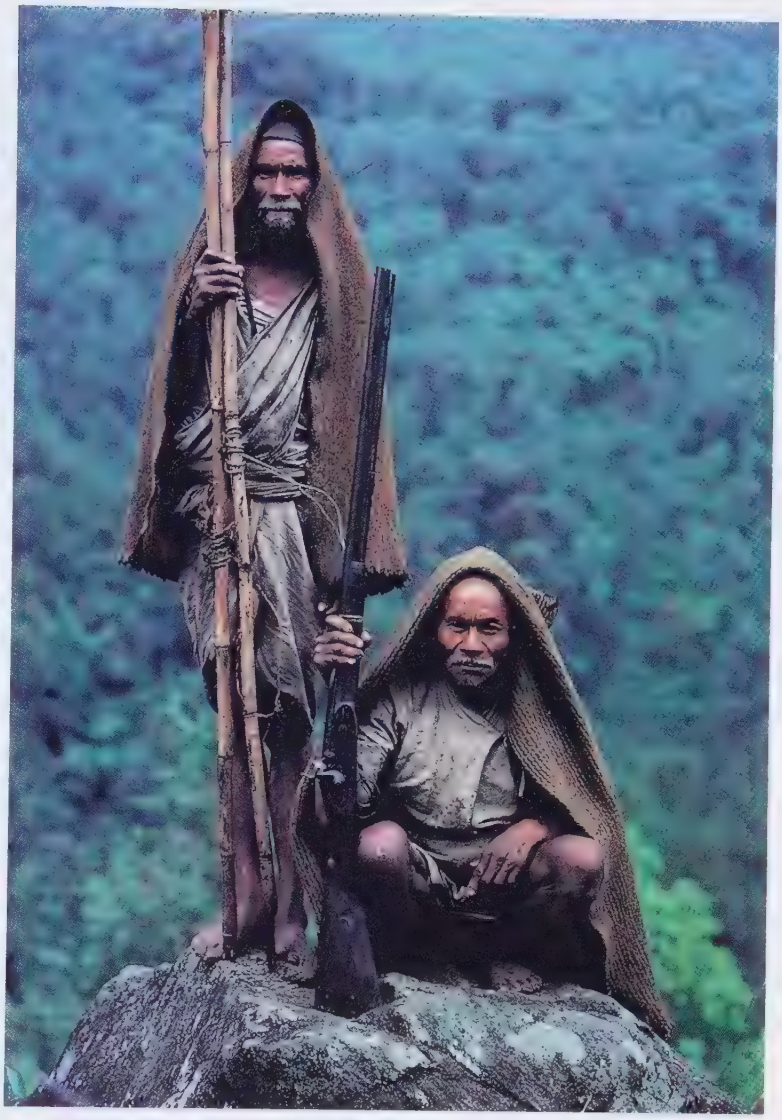
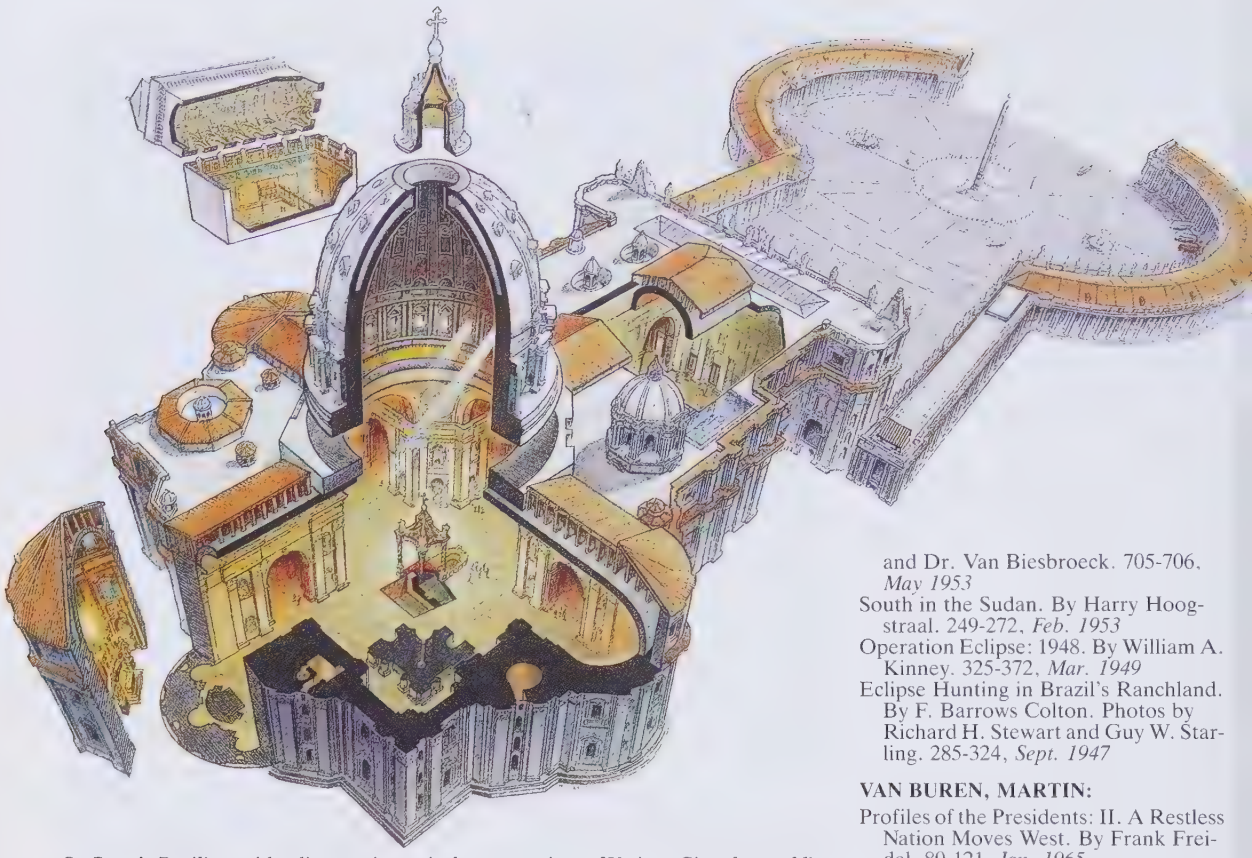


Holding their grandfather's musket, Sri Lal joins brother Mani at the start of a three-week honey hunt in the Himalayan foothills of central Nepal. ERIC VALLI AND DIANE SUMMERS



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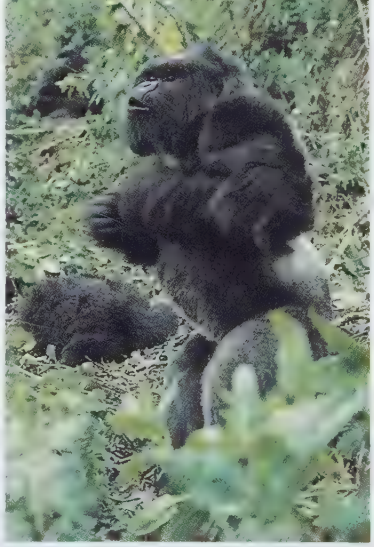

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Vietnam Veterans Memorial reunites buddies and begins to heal the nation's wounds of war. MEDFORD TAYLOR, BLACK STAR

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Remembering loved ones, visitors to the Vietnam Veterans Memorial in Washington, D.C., touch the names chiseled into polished granite. MEDFORD TAYLOR, BLACK STAR

Captained by Alan Villiers, a replica of the* Mayflower *braves a stormy sea in 1957 to retrace the Pilgrims' journey from England to America. GORDON TENNEY, BLACK STAR

The Age of Sail Lives On at Mystic. Photos by Weston Kemp. 220-239, *Aug. 1968*

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We're Coming Over on the *Mayflower.* 708-728, *May 1957*

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Wilno, Stepchild of the Polish Frontier. 777-784, *June 1938*

VINCI, LEONARDO DA. *See* Leonardo da Vinci

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Amid the Mighty Walls of Zion. By Lewis F. Clark. 37-70, *Jan. 1954*

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The U. S. Virgin Islands. By Thomas J. Colin. Photos by William Albert Allard and Cary Wolinsky. 225-243, *Feb. 1981*

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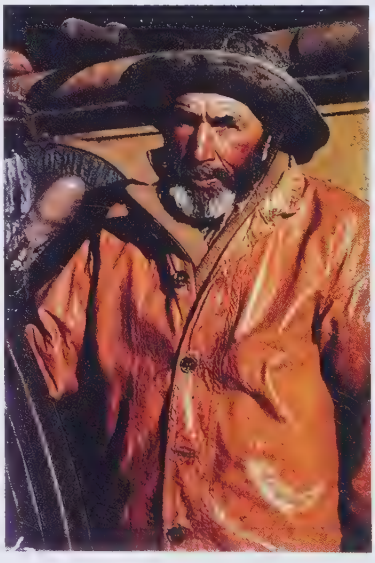

Antonio Rodrigues steers the Portuguese ship* Argus *as it travels to the Grand Banks to fish for cod in 1950. ALAN VILLIERS

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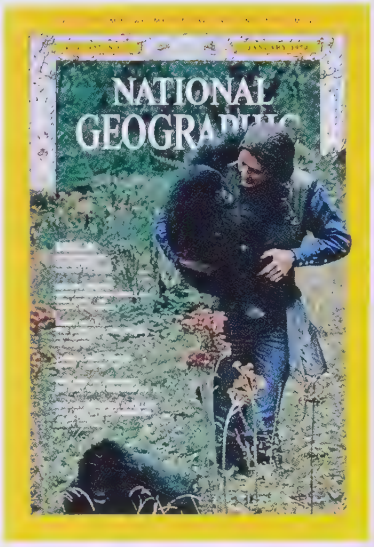

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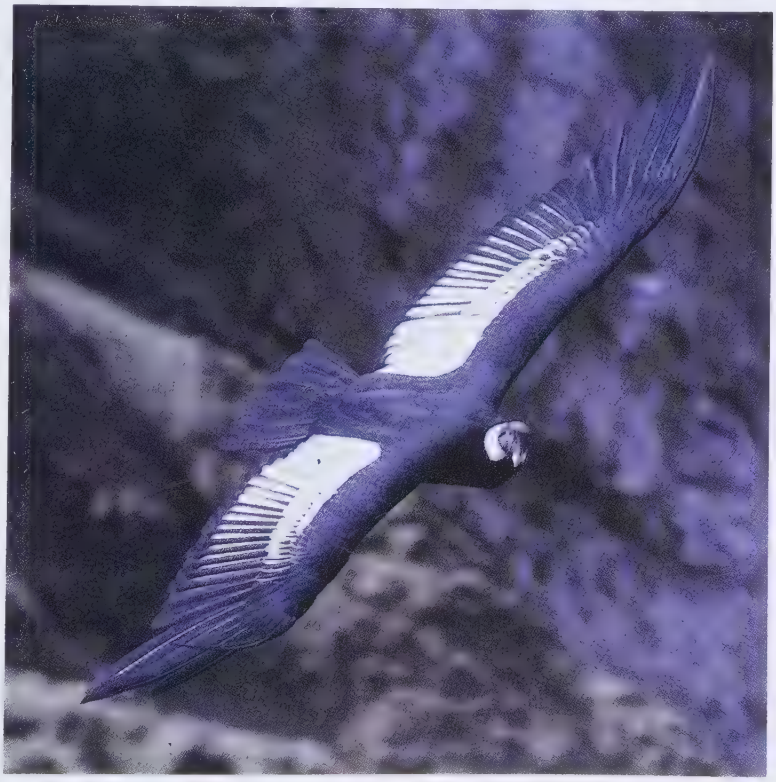
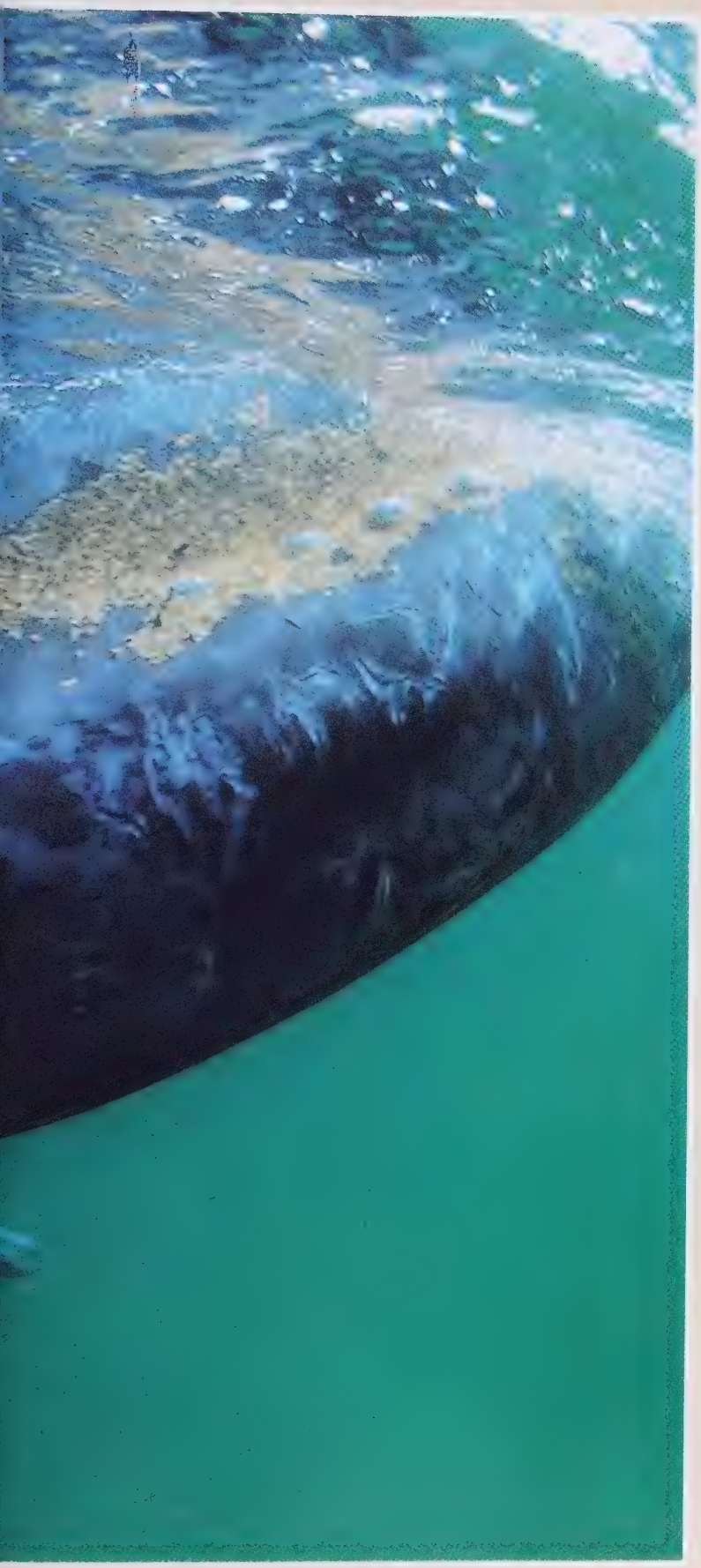


Andean condor, the largest of American vultures, glides on an updraft above Río Pasto canyon, one of the birds' few remaining retreats in Colombia. LIBBY McGAHAN



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WALDEN POND
WALKING TOURS
WALRUSES
WANGCHUCK DYNASTY
WARBLERS
WARSAW
WARSHIPS
GEORGE WASHINGTON
WASHINGTON, D. C.
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WOLSTENHOLME TOWNE
WOLVES
WOOD CARVING
WORLD WAR I
WORLD WAR II
WORLD'S FAIRS
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X RAYS
XIAN
XINGU NATIONAL PARK

A young southern right whale, a species hunted nearly to extinction, cavorts off Argentina.

FLIP NICKLIN

Welsh faces, reflecting strength born of struggle with an infertile land, appear in **Discovering Britain & Ireland.**

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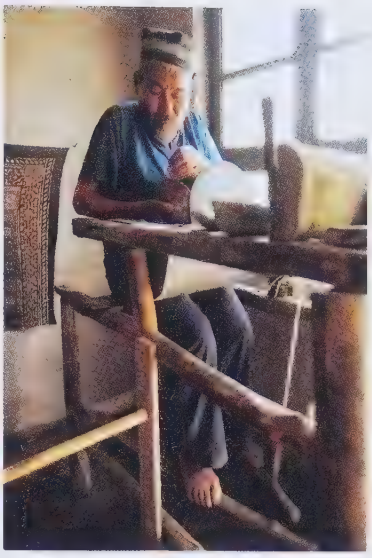

Jade carver in Hotan, China, creates a bangle with his traditional treadle-driven blade. FRED WARD, BLACK STAR

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Member of a 1934 climbing party films Mount Crillon during the first conquest of the Alaska peak. BRADFORD WASHBURN

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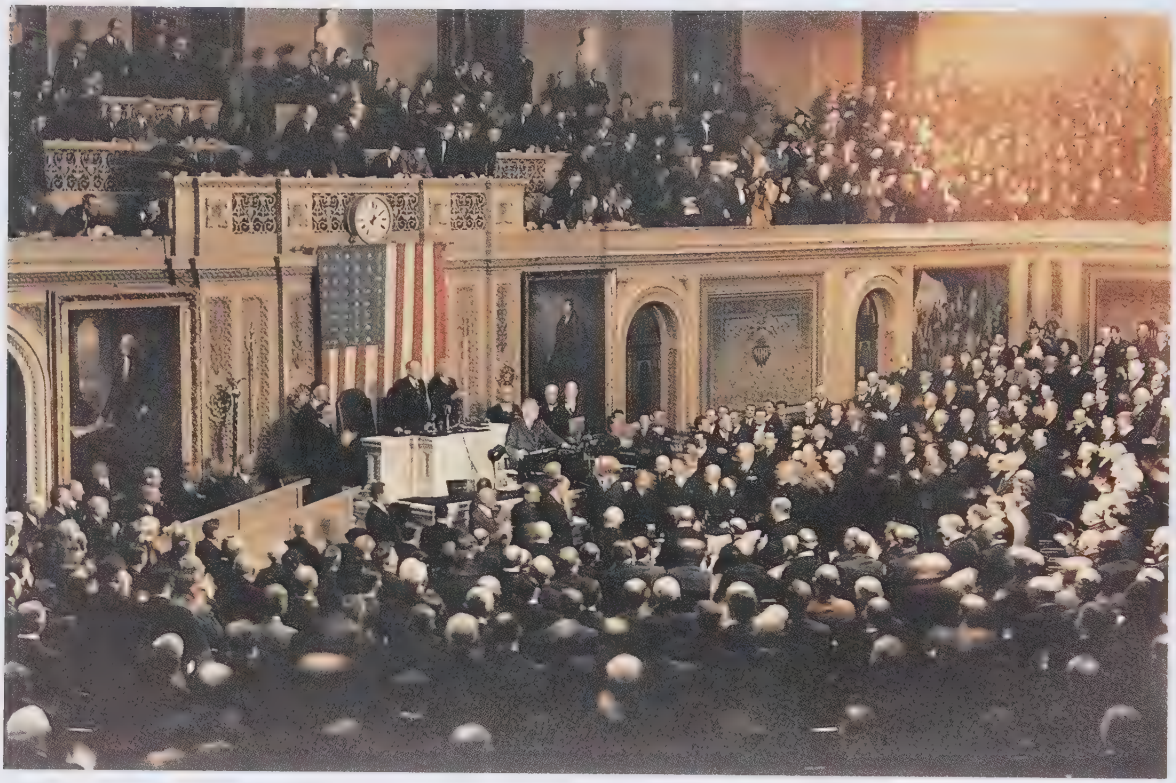

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Women in Washington, D.C., stroll around the Tidal Basin beneath blooming cherry trees, given to the nation by Japan and planted in 1912. © NATIONAL PHOTO COMPANY

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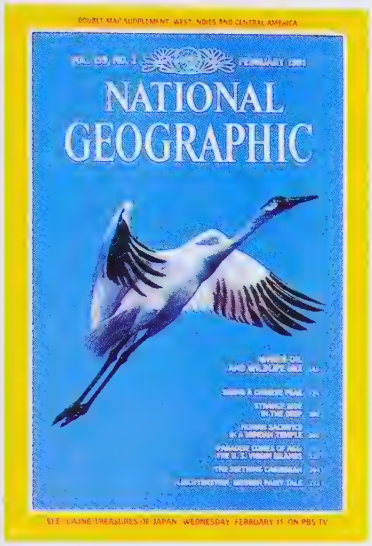
Ice veils the Cave of the Winds on the Niagara River, whose surging waters generated hydroelectric power for industries that supplied the World War I battlefront. ERNEST FOX



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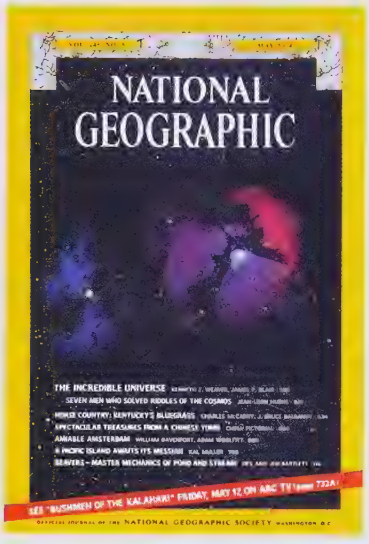
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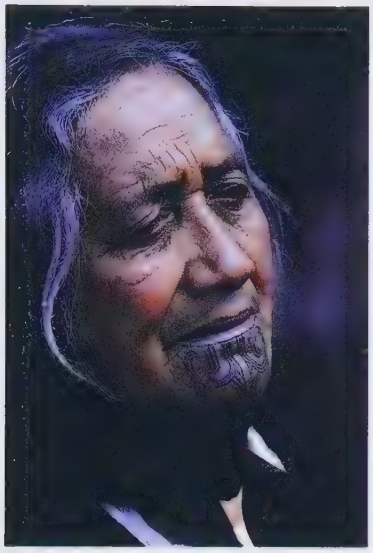
Hokkaido farmer hauls ashore a harvest of kelp, an aquatic weed belonging to the brown algae group that is used as a vegetable and condiment in Japan. EIJI MIYAZAWA, BLACK STAR

Coho, or silver salmon, is prized by commercial and sports fishermen of the North Pacific. PAINTING BY WALTER A. WEBER, NGS



An 1867 New Zealand law gives the Maori four parliamentary seats in Wellington. BRIAN BRAKE, MAGNUM

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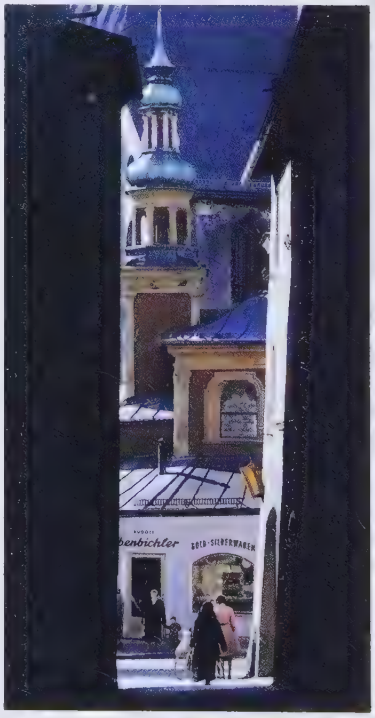

Narrow street frames a Gothic church and St. Magdalena's Chapel in the Austrian town of Solbad Hall. VOLKMAR WENTZEL, NGS

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Frederic Remington chronicled the American West's final frontier days in works such as "The Old Stage Coach of the Plains" (1901). AMON CARTER MUSEUM, FORT WORTH, TEXAS

A camp stove cooks vittles on a pack trip in the Big Horn region of Wyoming, a reminder of life in the Old West that attracted Frederic Remington. CHRIS JOHNS

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In the way of the Old West, cowhand Vern Torrance rolls a smoke on a Wyoming ranch. WILLIAM ALBERT ALLARD

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Not yet ready to mate, a female manatee in estrus, center, wards off a tumbling entourage of pursuing males in Florida's Crystal River. FRED BAVENDAM, PETER ARNOLD, INC.

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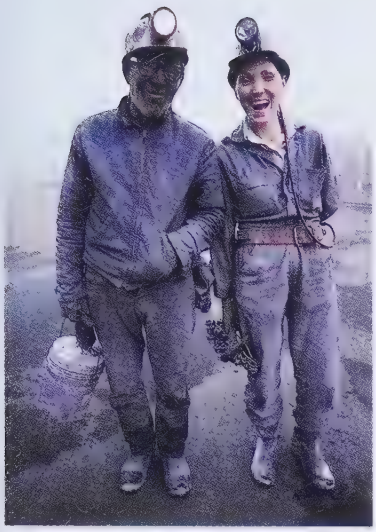
A hurricane brushes by Robin Lee Graham early in 1970 on the final West Indies-to-California leg of his five-year round-the-world solo sail. ROBIN LEE GRAHAM



West Virginia's first woman coal miner, Carol Bain, leaves her shift with David "Hoot" Frost. JODI COBB, NGS

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A run of more than a thousand miles across Australia's desolate Nullarbor Plain leaves plenty of time for reflection by the Tea and Sugar Train's engineer. WILLIAM ALBERT ALLARD

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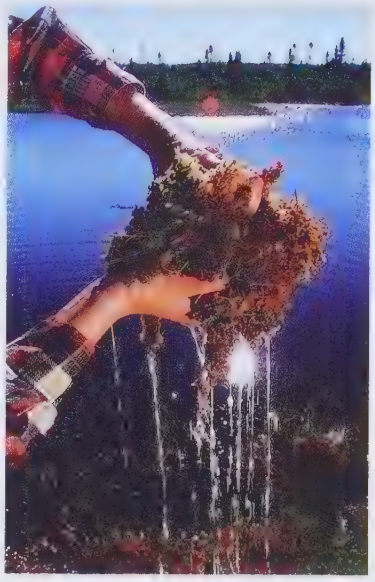

Handful of sphagnum moss drips water into a bog, the wetland world where the spongy plant thrives. SANDY FELSENTHAL

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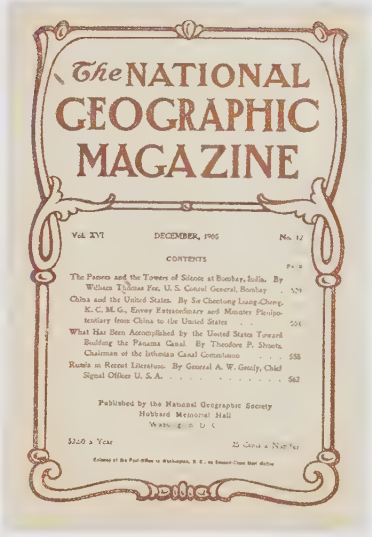

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A Wayana boy cools off in the cascading Itany River. Fewer than 1,000 Wayanas survive along the Suriname-French Guiana border in South America. CAROLE DEVILLERS

In a furious display, one male humpback whale lashes his tail as other suitors compete for a female in Hawaiian waters. FL P NICKLIN

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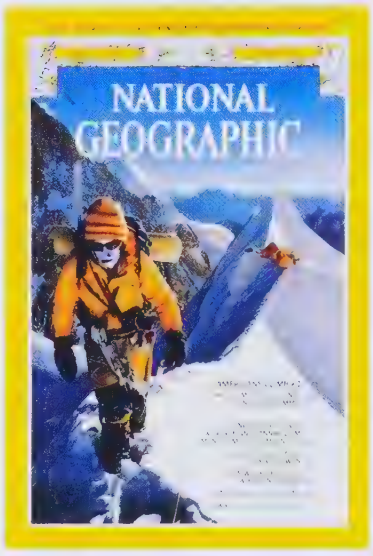

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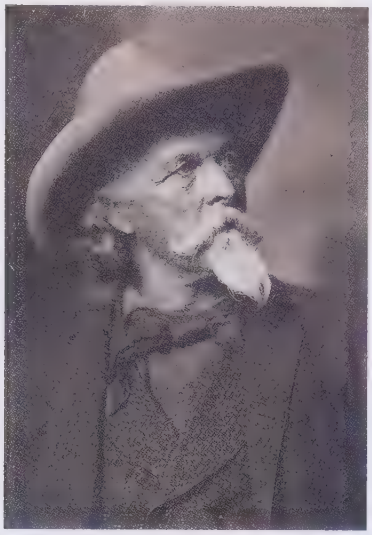

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Bull caribou grazes the tundra in the wilderness south of Alaska's Brooks Range in early September. MICHIO HOSHINO

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An Insect Community Lives in Flower Heads. By James G. Needham. 340-356, *Sept. 1946*

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California Says It with Wild Flowers. By Francis Woodworth. Photos by B. Anthony Stewart. Contents: Baby-blue-eyes, Blazingstar, Blue-blossom, Collinsia, Coreopsis, Dandelion, Eveningprimrose, Farewell-to-spring, Flannel Bush, Ithuriel's Spear, Lupine, Monkeyflower, Mustard, Owlclover, Poppy, *Rosa californica*, Toyon, Yellowdaisy, Tidytip. 492-501, *Apr. 1942*

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Pages from the Floral Life of America. Paintings by Mary E. Eaton. Contents: Acanthus, Amaranth, Amaryllis, Apple, Arum, Aster, Bicknell, Bladderwort, Borage, Broom-Rape, Buckthorn, Buckwheat, Bunchflower, Caper, Chicory, Diapensia, Dogwood, Evening-Primrose, Figwort, Four-O'Clock, Fumitory, Gentian, Ginseng, Gooseberry, Goosefoot, Gourd, Heath, Horsetail, Indianpipe, Lily-of-the-Valley, Logania, Madder, Magnolia, Meadowbeauty, Milkweed, Milkwort, Mimosa, Nettle, Olive, Parsley, Passion-flower, Pea, Plantain, Pondweed, Ragweed, Rush, Saxifrage, Senna, Sundew, Waterlily. 44-75, *July 1925*

Exploring the Mysteries of Plant Life. By William Joseph Showalter. Paintings by Mary E. Eaton. Included: Alfalfa, Amsonia, Arethusa, Bindweed, Blackberry-Lily, Checkerbloom, Cobaea Pentstemon, Coneflower, Creeping Polemonium, Daylily, Goldmoss, Grays Lily, Ground-Ivy, Honeysuckle, Meadow-Parsnip, Phlox, Pitcher-plant, Poppy-Mallow, Rhododendron, Rose Pogonia, St. Johnswort, Shootingstar, Snow-on-the-Mountain, Spatterdock, Springbeauty, Wildbergamot, Woodbetony, Woodsorrel, Yellow Ladyslipper. 581-646, *June 1924*

Midsummer Wild Flowers. Paintings by Mary E. Eaton. Included: American Waterlily, Aster, Beach Pea, Blue Vervain, Bluebell, Broom Flax, Corn Cockle, Corydalis, Dodder, Early Goldenrod, English Plaintain, False-Foxglove, Field Mustard, Gayfeather, Gentian, Golden St. John's-Wort, Groundcherry, Hairy Pentstemon, Hyssop Skullcap, Milkweed, Milkwort, Mistflower, Pickerelweed, Pokeweed, Pricklepoppy, Purple Avens, Purple Wild-Bergamot, Rosemallow, Sheep Laurel, Sheep Sorrel, Spiderwort, Sweetshrub, Tansy, Teasel, Turtlehead, Venus Looking-Glass, Yellow Fringed Orchid. 35-59, *July 1922*

Spectacular wildflowers of southwest Australia include ten-inch-long blossoms of a cut-leaf banksia. PAUL A. ZAHL, NGS

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Common American Wild Flowers. Paintings by Mary E. Eaton. Contents: Butter-and-Eggs, Butterfly-Weed, Button Bush, Chicory, Common Mullen, Fireweed, Forget-Me-Not, Fringed Gentian, Jack-in-the-Pulpit, New England Aster, Poison Ivy, Spotted Boneset, Steeple Bush, Swamp Rose-Mallow, Virginia Creeper, Wild Yellow Plum, Yarrow. 584-609, *June 1916*

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The Living Sands of the Namib. By William J. Hamilton III. Photos by Carol and David Hughes. Contents: Unique desert creatures. 364-377, *Sept. 1983*

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India Struggles to Save Her Wildlife. By John J. Putman. Paintings by Ned Seidler. 299-343, *Sept. 1976*

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Pounding hooves and a hunter's snarl sound as a cheetah fells a Thomson's gazelle in the wildlife spectacle of Tanzania's Serengeti National Park. MITSUAKI IWAGO

On the Galápagos Islands pressure from people and predators threatens wildlife such as these giant tortoises. DIETER AND MARY PLAGE

Eden in the Outback. By Kay and Stanley Breeden. 189-203, *Feb. 1973*
Strange Animals of Australia. By David Fleay. Photos by Stanley Breeden. 388-411, *Sept. 1963*

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Isle Royale, A North Woods Park Primeval. By John L. Eliot. Photos by Mitch Kezar. Included: Foxes, Moose, Wolves. 534-550, *Apr. 1985*
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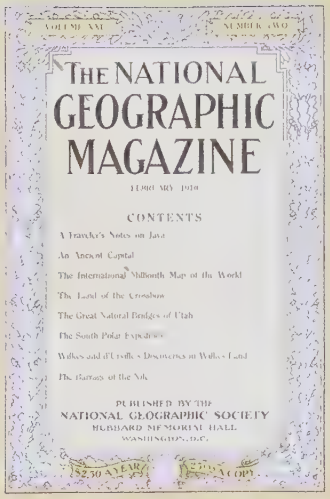
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PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY HUBBARD MEMORIAL HALL WASHINGTON, D.C.

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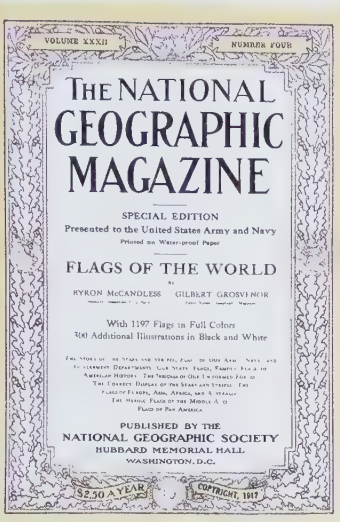
VOLUME XXXII NUMBER FOUR

THE NATIONAL GEOGRAPHIC MAGAZINE

SPECIAL EDITION
Presented to the United States Army and Navy
Printed on Water-proof Paper

FLAGS OF THE WORLD

BY
BYRON McCANDLESS GILBERT GROSVENOR

With 1197 Flags in Full Colors
300 Additional Illustrations in Black and White

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

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The December 1917 issue published a letter from President Woodrow Wilson, right, congratulating the Society on its October issue, devoted to historical and contemporary flags of the world. The 32 pages of color banners for 700,000 copies took three months to print.

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THE WHITE HOUSE
WASHINGTON

14 December, 1917

My dear Mr. Grosvenor:

The Flag Number of the National Geographic Magazine is indeed most interesting and most valuable. I sincerely congratulate you on the thoroughness and intelligence with which the work has been done. It constitutes a very valuable document indeed.

Cordially and sincerely yours,

Woodrow Wilson

Mr. Gilbert H. Grosvenor, Director,
National Geographic Society.

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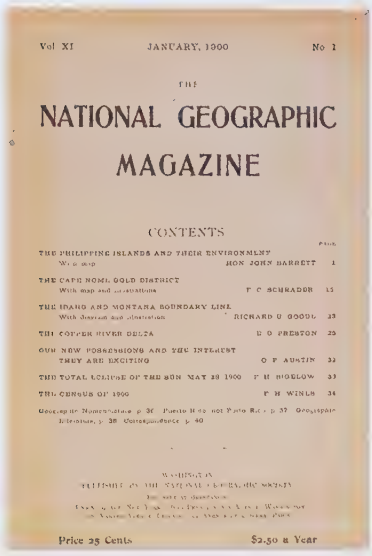
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A great meeting of waters
These immense natural reservoirs share an increasingly troublesome set of problems.
ONTARIO
MINN.
CANADA
UNITED STATES
LAKE SUPERIOR
Duluth
Superior
Great Lakes ore freighter
Sediments
Concentration of toxins in food chain
Absorbed by plankton
Eaten by small fish 50 to 100 times
Eaten by large fish 10 to 100 times
Dead plankton is sediment
PCB
In small crustaceans
FOOD CYCLE
Passing from small species to large, toxics accumulate as they move up the food chain. In this simplified depiction PCBs move from plankton to tiny crustaceans, to small forage fish, to large predatory species like salmon and lake trout.
QUEBEC
Upper Peninsula (Michigan)
Sault Ste. Marie
Condensation
Precipitation
Transpiration
Evaporation
Infiltration
EVAPORATION
Of water lost from the lakes, 40 percent comes from surface evaporation. This, coupled with evaporation from the land and transpiration from plants, condenses and returns as precipitation. Periods of cold weather, as in the last two decades, decrease evapotranspiration from the land surface, reducing its capacity to absorb precipitation. Hence runoff increases, raising lake levels.
MICHIGAN
LAKE HURON
ONTARIO
LAKE MICHIGAN
Green Bay
Ludington
Grand Haven
South Haven
St. Joseph
Chicago
Hammond
Gary
INDIANA
ILLINOIS
Original shore profile
Erosion
EROSION
Caused by storm-induced wave action and littoral currents, shore erosion has been accelerated by rising lake levels. Natural shoreline defenses, beaches dissipate the energy of waves to protect vulnerable bluffs and dunes. A rise of just one foot in water level can put several yards of sloping beach underwater
Toledo
OHIO
Lorain
Cleveland
Willoughby
Buffalo
Niagara Falls
Hamilton
Toronto
Kingston
Rochester
Oswego
Lewiston
Queenston
Welland Canals
Chippewa River
Black River
LAKE ERIE
Detroit River
Wind setup
Seiche
PENNSYLVANIA
NEW YORK
Marine invaders
WIND-BORNE TOXICS
Fallout from fossil fuel emissions, waste incineration, and evaporation contribute volatile organic chemicals and heavy metals whose effects are only now being understood. Superior gets fourfifths of its toxics from the air Michigan one-half.
SEDIMENTS & DREDGING
Lake sediments harbor microorganisms that introduce poisons to the aquatic food chain. Channels and harbors in industrial regions may contain polychlorinated biphenyls (PCBs) far in excess of allowable levels. Channel dredging stirs the sediments, recontaminating the water
RUNOFF & LEACHING
After years of high precipitation the Great Lakes watershed is nearly saturated. Thus current rainfall runs off quickly, overballing currents high lake levels. Leaching of pesticides and industrial toxics through subsoil remains an important route of contamination for the lakes
MARINE INVADERS
The sea lamprey probably entered the lakes via the Erie and Welland Canals. Nearly wiping out many predatory fish species, this parasite set the stage for the proliferation of the alewife in the 1930s. By the late 1960s this species accounted for 85 percent of Lake Michigan s fish population
WIND SETUP
Sustained wind blowing along a lake's axis piles water against the windward shore. Lasting a few hours or days, storm surges, as they are often called, are influenced by wind force, duration and fetch, or distance the wind blows across the water
SEICHE
A lake's surface oscillates following a disturbance, usually atmospheric. In the Great Lakes such seiches often occur after storms. In Lake Michigan rises of as much as eight feet have swamped docks and marinas, causing destruction and casualties

Wisconsin and other Great Lakes states share concern over ecological problems afflicting these waters. PAINTING BY DAVIS MELTZER

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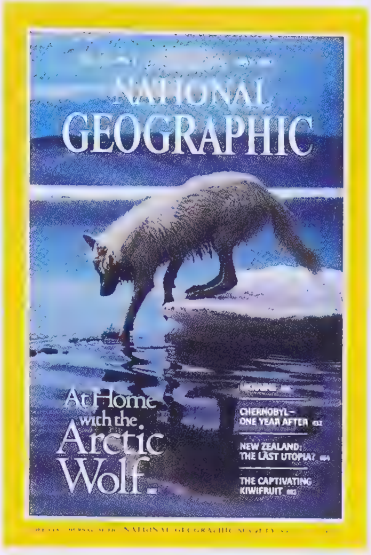

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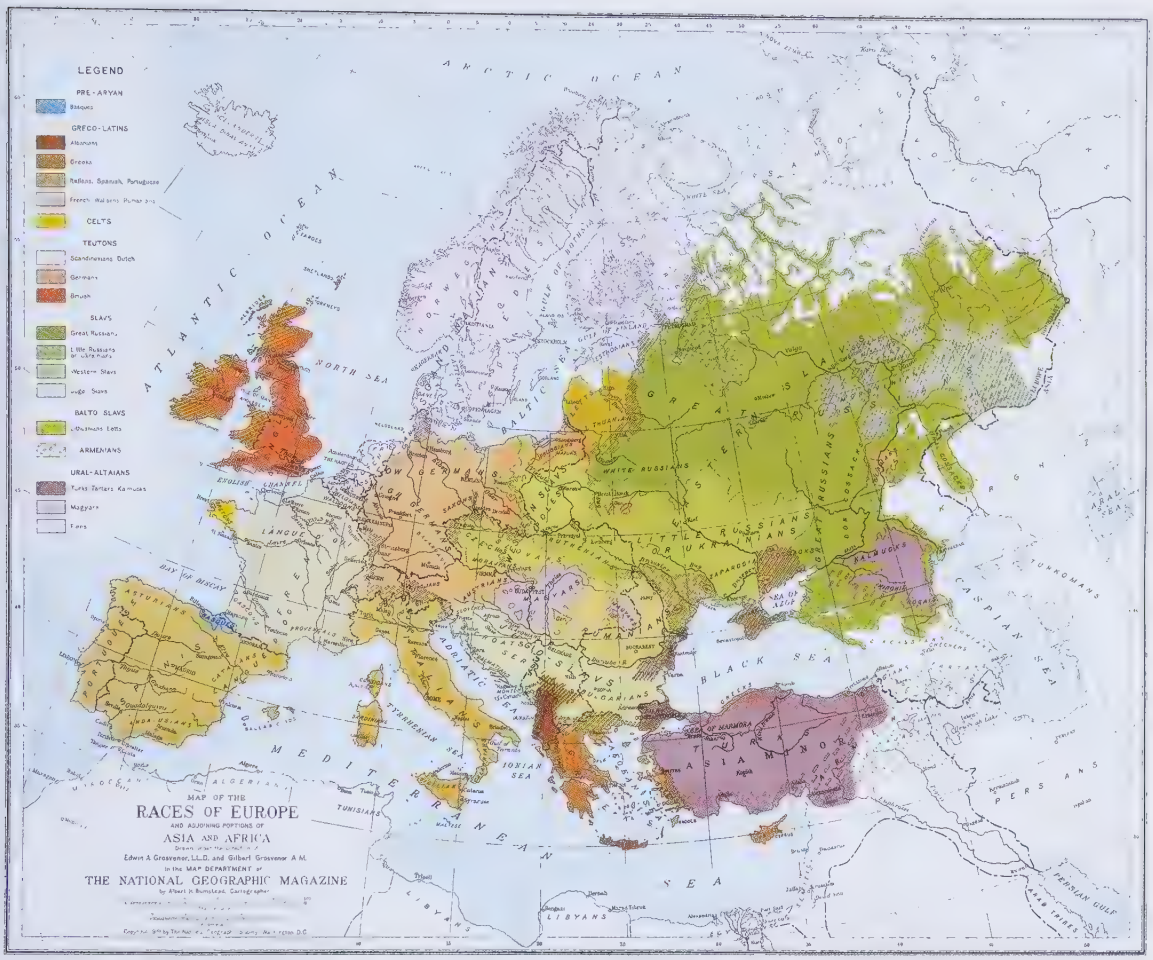
After four years of German occupation a French couple joyously greet World War I doughboys who helped liberate their town in 1918. COURTESY AMERICAN LEGION MONTHLY



A 1918 NATIONAL GEOGRAPHIC map shows the distribution of ethnic groups in Europe at the conclusion of World War I.

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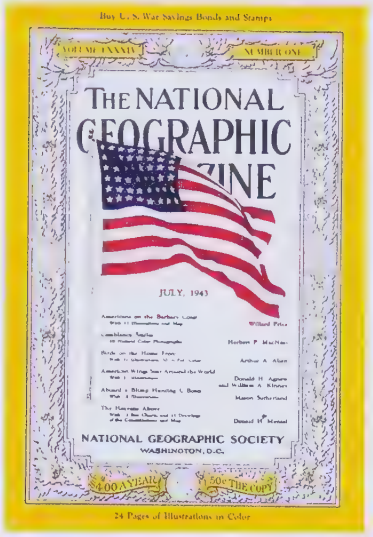
Wreck of the *Coolidge*. Text and photos



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Taking time out from the intense fighting that racked Italy during World War II, a pair of GIs pose for a photographer. U.S. ARMY SIGNAL CORPS, OFFICIAL

Prime Minister Winston Churchill is mobbed on V-E day, May 8, 1945, following Germany's World War II surrender. BRITISH COMBINE

Gilbert Islands in the Wake of Battle. By W. Robert Moore. 129-162, *Feb. 1945*
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Germany and Its Approaches. Note: International boundaries shown as of September 1, 1939, the day Germany invaded Poland, and as of January 1, 1938, before Germany seized Austria and Czechoslovakia. *July 1944*
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Front-line Town of Britain's Siege (Dover). By Harvey Klemmer. 105-128, *Jan. 1944*
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Lend-Lease Is a Two-way Benefit: Innovation in Creative Statesmanship

Testing German strength, U.S. infantrymen fire machine guns from a house 400 yards from the front near Anzio, Italy, during World War II. U.S. ARMY SIGNAL CORPS, OFFICIAL

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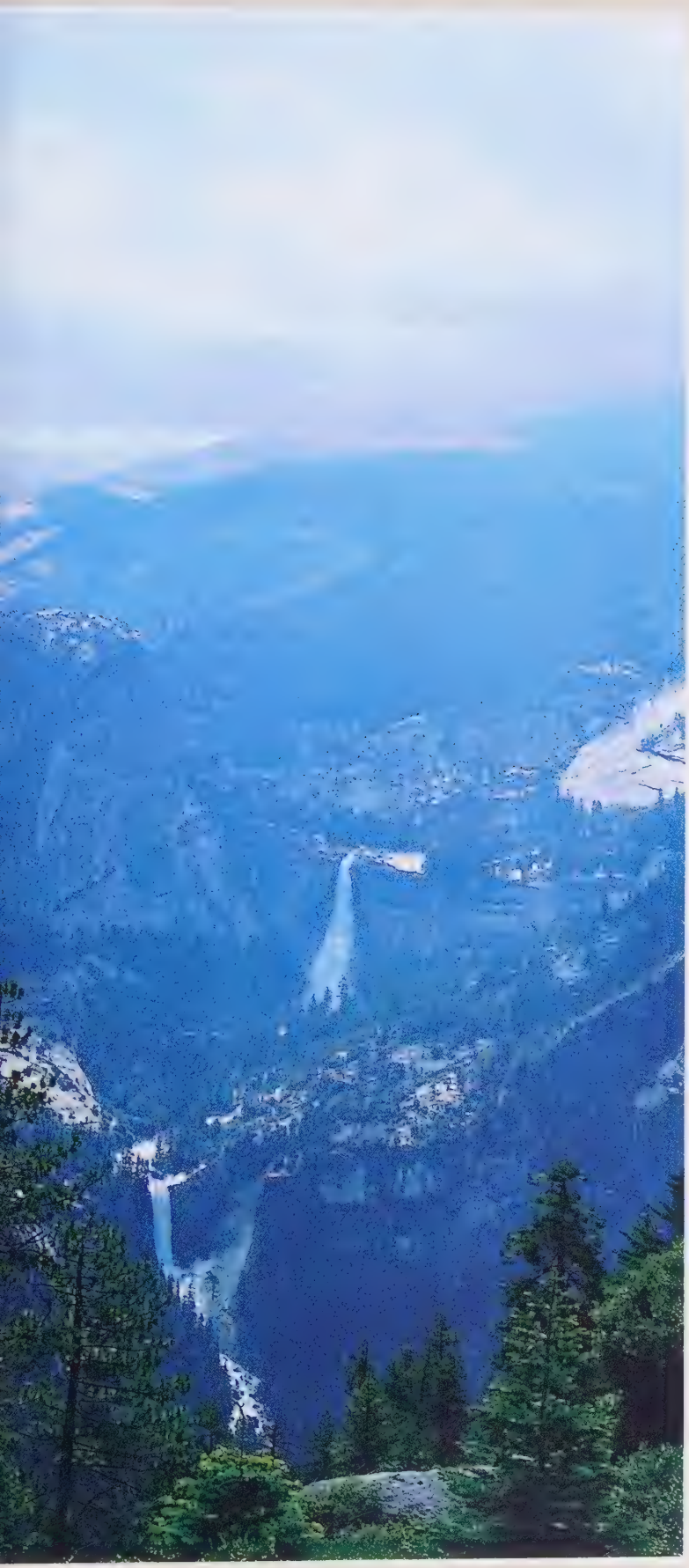

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YANOMAMO
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YASSI ADA
YELLOW FEVER
YELLOWSTONE NATIONAL PARK
YEREVAN
YORKSHIRE
YORKTOWN SHIPWRECK
YOSEMITE NATIONAL PARK
YUCATÁN PENINSULA
YUKAGHIRS
YUKON TERRITORY
YUMA TRAIL
YUNNAN PROVINCE
YUPIK ESKIMOS
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ZANZIBAR
ZAPOTEC INDIANS
ZEN BUDDHISM
ZHEJIANG PROVINCE
ZHUHAI SPECIAL ECONOMIC ZONE
ZIMBABWE
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ZION NATIONAL PARK
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ZOQUE INDIANS
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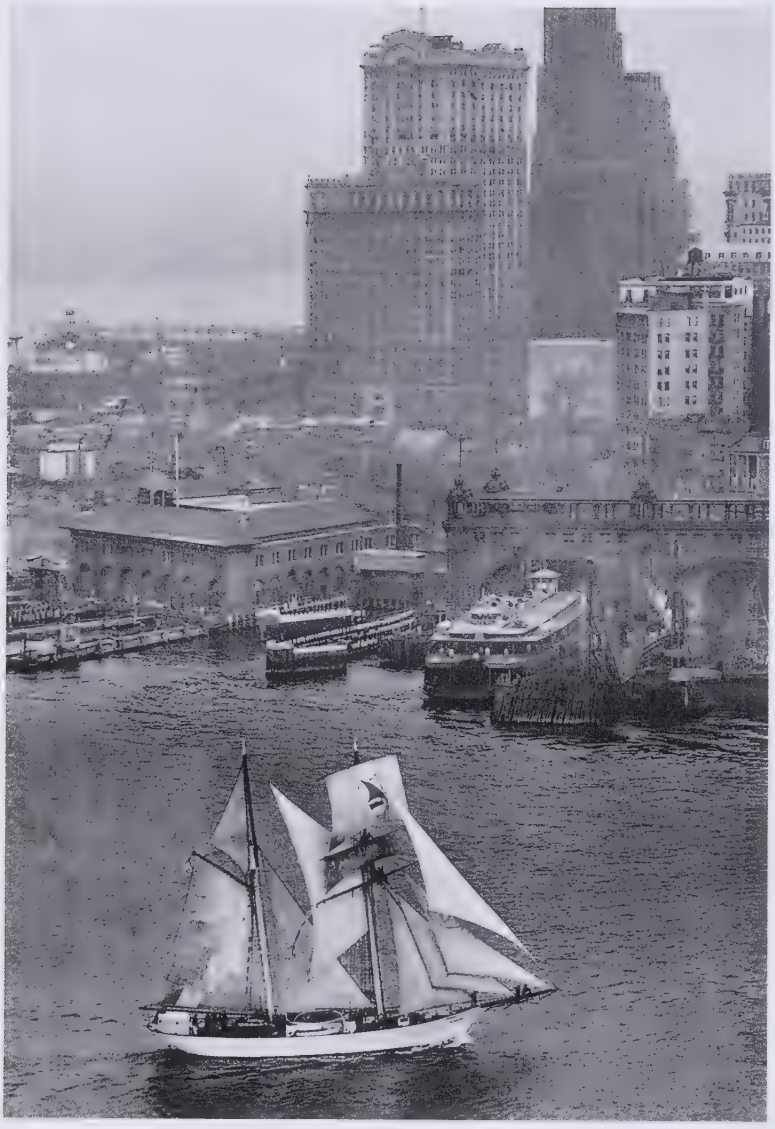
Nevada and Vernal Falls drop the frothing Merced River into the Yosemite Valley.

JONATHAN BLAIR



Under full sail the brigantine* Yankee *in 1949 glides past New York City after an 18-month, 45,000-mile voyage around the world. TED KELL, *NEW YORK HERALD TRIBUNE*

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Inside Europe Aboard *Yankee*. By Irving and Electa Johnson. Photos by Joseph J. Scherschel. Included: Fastnet race. 157-195, *Aug. 1964*

Down East to Nova Scotia. By Winfield Parks. Included: Marblehead-Halifax race, Bras d'Or McCurdy Cup race, Jones Trophy. 853-879, *June 1964*

To Europe with a Racing Start. By Carleton Mitchell. Included: Newport-to-Bermuda race. 758-791, *June 1958*

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In the Far Pacific: At the Birth of Nations. By Carolyn Bennett Patterson. Photos by David Hiser and Melinda Berge. Included: Mariana Islands, Marshall Islands, Kosrae, Pohnpei, Truk, Yap, Palau. 460-499, *Oct. 1986*

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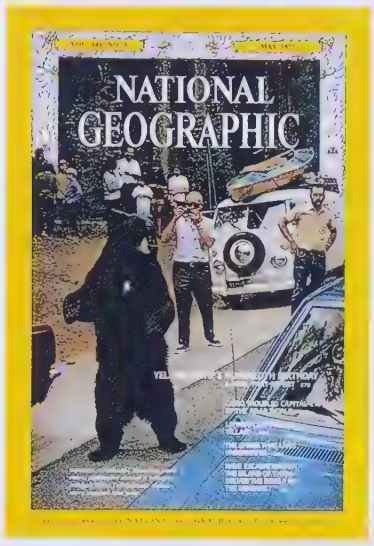
The new* Yankee*, a ketch, pauses by an ancient Egyptian granite quarry on a mid-1960s cruise up the Nile River from the northern delta into the Sudan. WINFIELD PARKS, NGS



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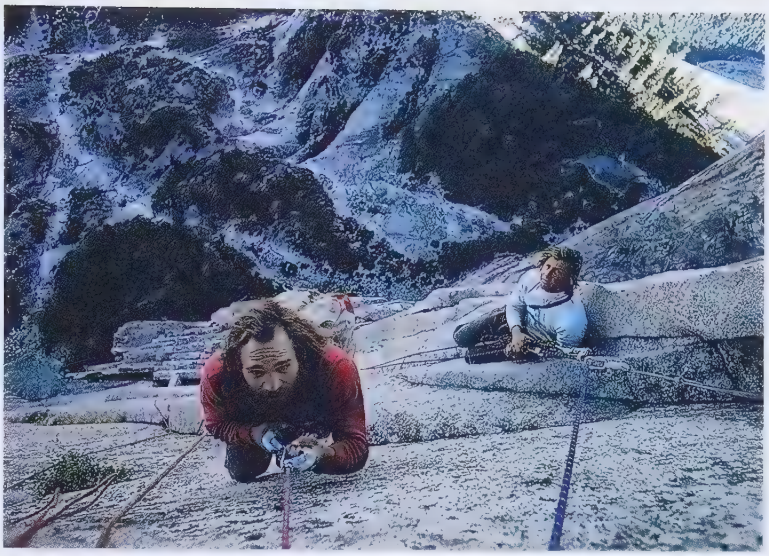

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Descendant of fierce warriors, a Zulu youth strumming his guitar strolls the grassy hills of Zululand, a region of the Republic of South Africa. DICK DURRANCE II

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Scientific Research and Exploration

By MELVIN M. PAYNE CHAIRMAN, COMMITTEE FOR RESEARCH AND EXPLORATION

IN ITS CENTENNIAL YEAR the National Geographic Society celebrated its substantial contribution to uncovering new knowledge through ever expanding investment in scientific research. When the Society's 10,500,000 members open their monthly NATIONAL GEOGRAPHIC magazines, they enjoy the principal benefit of membership. Many will note that certain articles—undersea discoveries, archaeological investigations, and natural history examinations, for example—carry a note saying "a research project supported in part by your Society." This is a reminder that members can take pride in the contribution that their dues make to supporting these as well as the many other Society research efforts not reported in the GEOGRAPHIC.

Since 1890 the Society has backed worldwide explorations and has supported basic research related to geography. Through its Committee for Research and Exploration, the Society has made close to 4,000 grants to assist the efforts of scholars and scientists around the world in increasing knowledge of our planet, its environment, and its inhabitants, from the tiniest mite to the most exalted achievements of humankind—and even of the cosmos beyond. In the past ten years funds allocated to research have exceeded the total amount spent in the prior 88 years. In 1988 alone 260 grants were made with a total budget of about six million dollars, a figure that exceeded the 1983 budget by nearly three million dollars.

Time and again this support has yielded important, even spectacular, finds. In Peru recent excavations at a site of the pre-Inca Moche people uncovered the richest cache of pre-Columbian artifacts ever scientifically excavated in the Americas. Principal investigator Walter Alva, with Christopher B. Donnan, brought to light some of the most finely crafted goldwork yet found in the New World—an archaeological discovery among the most astonishing in the modern era.

Across the world in Kenya, Alan Walker of Johns Hopkins University found jaws of an apelike creature that lived 17 million years ago—possibly a common ancestor of human beings and all the great apes. Team member Kamoya Kimeu came upon a remarkably complete 1.6-million-year-old skeleton of *Homo erectus*.

The results of many Society-backed research projects appear within the pages of NATIONAL GEOGRAPHIC RESEARCH, a scientific quarterly launched in 1985 that features Society-funded studies but

Forging a bond with an endangered species, Dian Fossey picks leaves that she chewed like a mountain gorilla to reassure an onlooker. For more than a decade this extraordinary woman was supported by the Society's Committee for Research and Exploration. Research grants also aid the search for the past. A thousand-year-old jar rises from a natural well at Dzibilchaltún, a Maya city explored by E. Wyllys Andrews IV of Tulane University.

ALAN ROOT (OPPOSITE); LUIS MARDEN, NGS

Bold steps leading to nearly 4,000 grants began in 1890 with the Society's first expedition. Its members, standing atop an uncharted moraine (above), made a landmark survey of North America's highest range, the St. Elias Mountains on the Alaska-Canada border.

Society-supported research now plumbs the depths of the sea, where marine zoologist Eugenie Clark has studied deepwater sharks. Here, at 150 feet, she attempts to cut free a tangle of sixgill sharks and a gummy shark hooked on the same longline.

ISRAEL C. RUSSELL, U.S. GEOLOGICAL SURVEY, (ABOVE); EMORY KRISTOF, NGS

welcomes contributions from independent scholars and scientists. RESEARCH immediately took its place as an authoritative peer in the world of scientific publications. The highest quality drawings, charts, maps, and color photographs enliven each issue.*

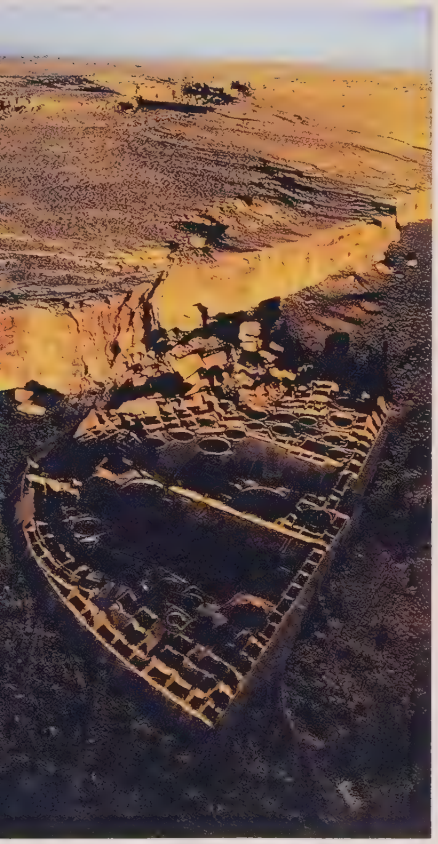
In 1988, as part of its centennial celebration, the Society convened a symposium sponsored by the Committee for Research and Exploration at which 22 international experts recounted advances in science, technology, and exploration over the past century. Their primary emphasis, however, struck at concerns for the future—concerns that demand solutions if humanity is to maintain and improve its quality of life. The symposium focused on major issues that affect the future of air and water quality, land availability, forest conservation, environmental stability, and the protection of biological diversity.†

Here follow, under 42 category headings, summaries of the research projects. Even a casual glance at this body of work must impress the reader with the breadth and variety of findings made possible by member support of their Society's research objectives.

*A subscription to NATIONAL GEOGRAPHIC RESEARCH is $40 for one year; Canada $58; all other countries $66 airmail, $46 surface. Remit to National Geographic Society, P.O. Box 1111, Washington, D. C. 20013-9990.

†The symposium proceedings, published as *Earth '88: Changing Geographic Perspectives,* are available for $20 from National Geographic Society, P.O. Box 1640, Washington, D. C. 20077-9952.

Capts. Albert W. Stevens and Orvil A. Anderson soared in **Explorer II** *to a record 72,395 feet in 1935.* RICHARD H. STEWART, NGS



In the New Mexico sun, thousand-year-old ruins of Pueblo Bonito, built by the Anasazi, lie in Chaco Canyon. DAVID L. BRILL

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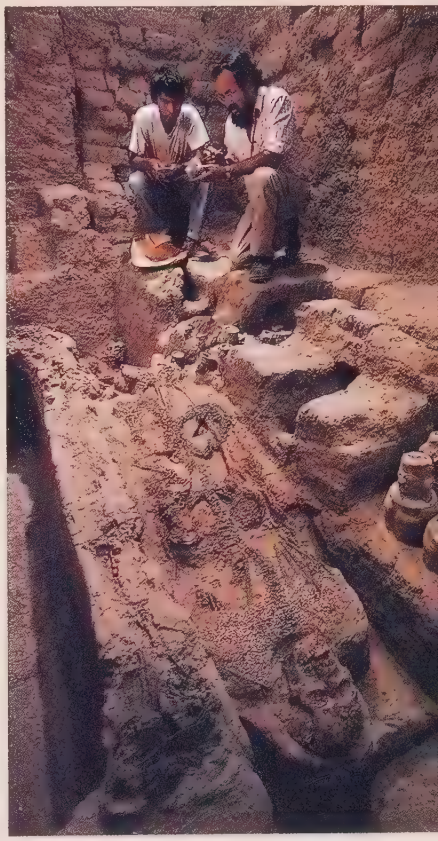
To loosen grime, wet fabric drapes a second-century A.D. Aphrodite from the ancient city of Aphrodisias. DAVID L. BRILL



Project director Walter Alva cleans jars dug from the spectacular tomb of a Moche nobleman at Sipán, Peru. BILL BALLENBERG

Physical anthropologist Sara Bisel preserves skeletons buried at Herculaneum by the eruption of Mount Vesuvius in A.D. 79. A gold coin was found in the purse of an armed man trapped on the beach.

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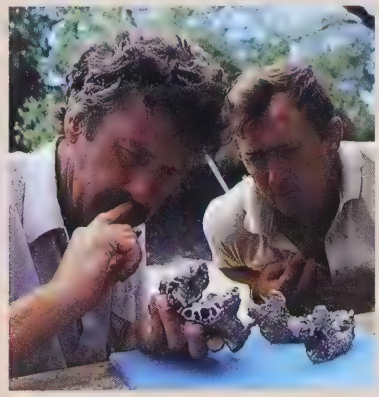
A mother and daughter belonging to the Lua, Thai mountain people, prepare rice for transplanting. PETER KUNSTADTER

An archaeologist removes an amphora from the oldest known shipwreck, sunk off Turkey 34 centuries ago. DONALD FREY

Palomar Observatory-National Geographic Society Sky Survey photographed Andromeda. WILLIAM C. MILLER



Alan Walker, left, and Richard Leakey examine a 1.6-million-year-old human jawbone found in East Africa. DAVID L. BRILL

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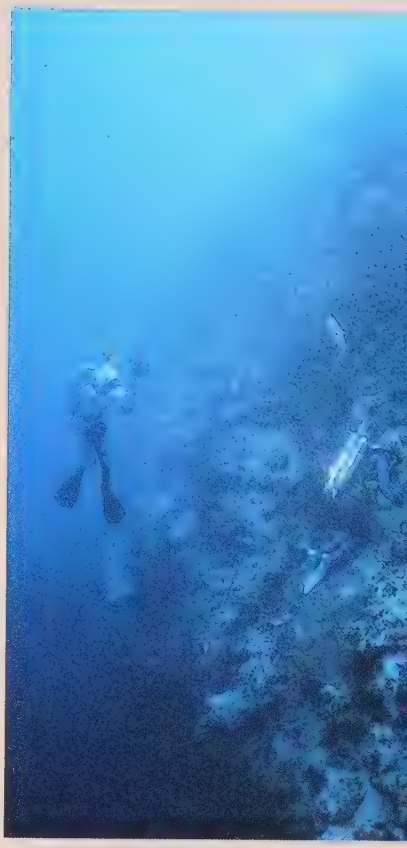

Marine biologist Walter Starck and his wife, Jo, explore reefs off Andros Island in the Bahamas. BATES LITTLEHALES, NGS

Snug in a self-made shell, a female paper nautilus jets about by ejecting water through a siphon. ROBERT F. SISSON, NGS

A camera's click alerts a timber wolf, subject of a field study of moose and wolves on Isle Royale in Lake Superior. L. DAVID MECH

This average-size rafflesia measures 27.5 inches; some specimens of the world's largest flower span a yard. YVES LAUMONIER

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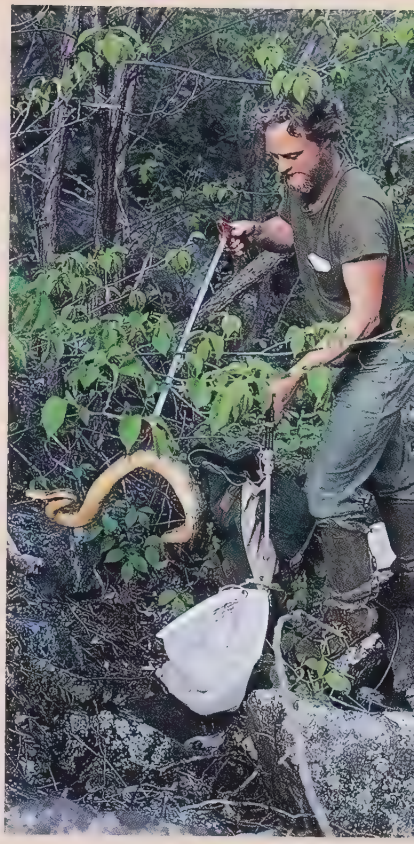

Bagging for tagging, biologist William S. Brown has studied the timber rattlesnake for nearly a decade. BIANCA LAVIES

Unwilling to mate, a female Galápagos tortoise gives a male the slip by fleeing to mud. CRAIG AND JAN MACFARLAND

A young brown bear feasts on salmon in Alaska. Research grants have funded nine bear studies. ALLAN L. EGBERT

The guanaco's wild relatives roam Tierra del Fuego as one of South America's cameloid species. WILLIAM L. FRANKLIN

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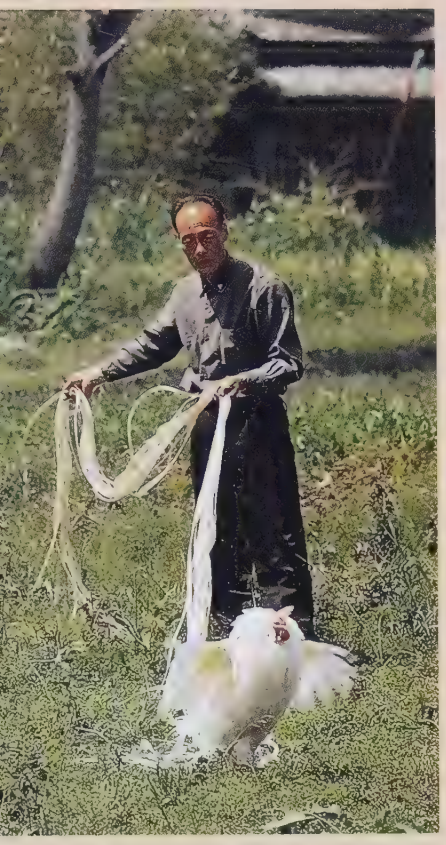
Scarred humpback whale hangs head down to sing his complex song, probably related to courtship. FLIP NICKLIN



Japan's long-tailed fowl, or **onagadori,** *must live nearly a decade to grow 30-foot tail feathers.* EIJI MIYAZAWA, BLACK STAR

Hunger threatens a Philippine eagle chick, its parents' hunting curtailed by slash-and-burn farming. NEIL RETTIG

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Millions of migrating monarch butterflies spend the winter on a remote mountainside in Mexico. ALBERT MOLDVAY

A centipede is crushed by a marauder ant,* Pheidologeton diversus, *on the island of Celebes in Indonesia. MARK W. MOFFETT

While surveying the China-Tibet frontier in 1924, Joseph F. Rock lived in the lamasery of the Prince of Choni. JOSEPH F. ROCK

A cascade of pink shrimp harvested off southern Florida were nurtured in tidal estuaries. ROBERT F. SISSON, NGS

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Fine-tuning a Grand Canyon map, artist Tibor G. Toth, left, consults with surveyor Bradford Washburn. JIM MENDENHALL

Discoverer of the Valley of Ten Thousand Smokes, Robert F. Griggs wades Alaska's ash-choked Katmai River. B. B. FULTON

Forty feet from head to toe, a **Brachiosaurus** *dwarfs a forelimb's upper bone and a man.* ROY ANDERSEN

Lichens, here studied by geobotanist James Anderson, help track the retreat of Alaska's glaciers. CHRISTOPHER G. KNIGHT

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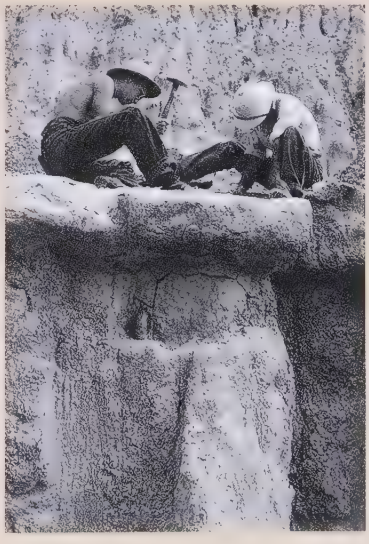
Entombed by an ashfall ten million years ago, the remains of a rhinoceros herd lie in a Nebraska ravine. ANNIE GRIFFITHS BELT



Scientists in 1940 unearth bones of the antelope-like* Protoceras *in the Badlands of South Dakota. JOSEPH P. CONNOLLY

From **Calypso,** *Capt. Jacques-Yves Cousteau prepares to test* **Denise,** *a two-man submersible.* THOMAS J. ABERCROMBIE, NGS

Harold E. Edgerton's cameras, stroboscopic lights, and side-scan sonar have examined the seafloor. DAVID DOUBILET

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Tonga Islands volcanoes: survey of recent activity. William G. Melson and W. B. Bryan. 1968
Vesuvius, El Chichón, Tambora. Haraldur Sigursson. 1982, 1984-87
Volcanic flames and fumes: spectroscopy. Hawaii. Dale P. Cruikshank. 1971
Volcanic gas and fumes: spectroscopy. Hawaii. Dale P. Cruikshank and Jay M. Pasachoff. 1981
——— and petrology. Galápagos. Bert E. Nordlie. 1971
Volcanic rocks. Micronesia. Fred Barker. 1976
Volcanism. Austral Islands. Rockne H. Johnson. 1971
——— Zuni Centers volcanic field, late Cenozoic. New Mexico. A. William Laughlin. 1973
Volcanoes, submarine. Near Samoa. Rockne H. Johnson. 1975
Volcanologic studies: evidence for mantle upwelling. Azores. Martin F. J. Flower. 1983

Aboard **Alvin,** *the submersible used for deep-sea exploration—including discovery of hydrothermal vents in the Galápagos Rift and the* **Titanic** *in 1985—pilot Dudley Foster, left, and Robert D. Ballard communicate with their mother ship.* MARTIN BOWEN

History

Falkland Islands: Charles Darwin's expedition. Archives and Falklands. Patrick H. Armstrong. 1988
Hydraulic cement, early. Greece and Cyprus. Theodore A. Wertime. 1980
Llanos: tropical plains frontier. Northern South America. Jane M. Loy. 1973
Manuscript collections: survey. Nepal, Sikkim, and Bhutan monasteries. John F. Staal and Lewis R. Lancaster. 1973
Manuscripts: St. Mpatsis Monastery. Andros Island, Aegean Sea. Antonia Tripolitis. 1968-69
Metallurgic zones: descriptions by Homer and Strabo. Northern Turkey. Theodore A. Wertime. 1970
Naval documents: cataloging and indexing. Naval Historical Foundation. 1965
Nepala-mahatmya: translation of Sanskrit. Kathmandu Valley. Jayaraj Acharya. 1988
Plantation slaves: historical anthropology. Barbados. Jerome S. Handler. 1987
Persian Royal Road Survey. Anatolia, Turkey. S. Frederick Starr. 1961
Population dynamics: protohistoric aboriginal. Louisiana. Stephen Williams. 1985
Russians in Alaska, 18th- and 19th-century penetration: archival and on-site studies. Lydia T. Black. 1984

Sociology

City street life. New York City. William H. Whyte. 1972-73

Medals and Awards of the Society

A freestanding crystal globe and pedestal by Steuben Glass along with $10,000 for the pursuit of additional research was awarded to each of 15 outstanding contributors to geography and other fields of scientific study and exploration on November 17, 1988. The National Geographic Society Centennial Awards were presented at a banquet in Washington, D.C. There Society staff members and guests ranged along the head table to talk with the honorees.

SISSE BRIMBERG (ABOVE); LIDA SUCHY

EXTENDING ITS LONG TRADITION of recognizing distinguished achievement in discovery and research, the National Geographic Society in November 1988 presented to 15 illustrious explorers, scholars, and scientists Centennial Awards for major contributions to knowledge of the earth, its inhabitants, and the encompassing natural environment. The honorees' names were added to the roster of eminent men and women who from 1906 have received from the Society medals and other awards for outstanding service to geography.

The recipients, each presented with a crystal globe, exemplify high and continuing achievement in a wide range of disciplines and epitomize the Society's century of commitment to and support of research and exploration. Each honoree also received $10,000 for research. The recipients:

Robert D. Ballard was a principal discoverer of *Titanic* and has explored deep-ocean geology and hydrothermal vents. George F. Bass has applied the painstaking methods of land archaeology to the seafloor, thereby uncovering artifacts of great beauty and cultural significance. Jacques-Yves Cousteau, who codesigned the Aqua-Lung and developed vessels for oceanic exploration, has investigated the world's seas and brought their wonders to millions.

Frank C. Craighead, Jr., and John J. Craighead pioneered radiotracking and satellite biotelemetry for the study of wildlife. Harold E. Edgerton invented the stroboscopic high-speed flash and developed side-scan sonar and underwater cameras.

Archaeologist Kenan T. Erim excavated a great Greco-Roman urban complex at Aphrodisias, Turkey. Senator John H. Glenn, Jr., first American to orbit the earth, opened a spectacular new vision of the "blue planet." The work of Jane Goodall with chimpanzees in Tanzania has helped humans gain a better understanding of their own place in nature.

Sir Edmund Hillary was first, with Sherpa Tenzing Norgay, to stand on the summit of Mount Everest. Mary D. Leakey and Richard E. Leakey have greatly advanced knowledge of the evolution of humans through their investigations of hominid remains in East Africa. For decades lecturer Thayer Soule has brought the world in all its diversity to Geographic audiences in Washington, D.C.

Barbara Washburn and Bradford Washburn have been leaders in aerial photography and mapping in the mountains of Alaska, the Himalaya, and the Grand Canyon.

NATIONAL
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100
Years

HUBBARD MEDAL

The Hubbard Medal, named for Gardiner Greene Hubbard, first President of the Society, is awarded for distinction in exploration, discovery, and research.

JOHN W. YOUNG AND CAPT. ROBERT L. CRIPPEN, USN, 1981: For contributions to space science as crew of the space shuttle *Columbia*.

JAMES E. WEBB, 1978: Outstanding contribution to manned lunar landings.

BRUCE CHARLES HEEZEN AND MARIE THARP, 1978: Contributions to knowledge of the ocean floor.

ALEXANDER WETMORE, 1975: Contributions to ornithology.

NEIL A. ARMSTRONG, COL. EDWIN E. ALDRIN, JR., USAF, AND LT. COL. MICHAEL COLLINS, USAF, 1970: Space exploration; first moon landing as the crew of Apollo 11.

COL. FRANK BORMAN, USAF, CAPT. JAMES A. LOVELL, JR., USN, AND LT. COL. WILLIAM A. ANDERS, USAF, 1969: Space exploration; first to orbit the moon as crew of Apollo 8.

JUAN T. TRIPPE, 1967: Contributions to aviation.

AMERICAN MOUNT EVEREST EXPEDITION, 1963: Contributions to geography and high-altitude research through conquest of earth's highest mountain.

LT. COL. JOHN H. GLENN, JR., 1962: Space exploration.

LOUIS S. B. AND MARY D. LEAKEY, 1962: Anthropological discoveries in East Africa.

SIR VIVIAN FUCHS, 1959: Leadership of British trans-Antarctic expedition.

U.S. NAVY ANTARCTIC EXPEDITIONS, 1959: Antarctic research and exploration, 1955-59.

PAUL A. SIPLE, 1958: For 30 years of Antarctic explorations, including leadership of first group to winter at the South Pole.

BRITISH EVEREST EXPEDITION, 1954: First ascent of Mount Everest.

ROBERT S. OAKES, NGS

COMDR. DONALD B. MACMILLAN, 1953: Arctic explorations, 1908-52.

GEN. H. H. ARNOLD, 1945: Contributions to aviation.

LINCOLN ELLSWORTH, 1936: Extraordinary achievements in polar exploration.

CAPTS. ALBERT W. STEVENS AND ORVIL A. ANDERSON, 1935: World altitude record of 72,395 feet in balloon *Explorer II*.

ANNE MORROW LINDBERGH, 1934: Notable flights, as copilot, on Charles Lindbergh's aerial surveys.

ROY CHAPMAN ANDREWS, 1931: Geographic discoveries in Central Asia.

COL. CHARLES A. LINDBERGH, 1927: New York-Paris solo flight.

LT. COMDR. RICHARD E. BYRD, JR., 1926: First to reach North Pole by airplane. 1930, Special Medal of Honor: First to attain South Pole by air.

VILHJALMUR STEFANSSON, 1919: Discoveries in Canadian Arctic.

SIR ERNEST H. SHACKLETON, 1910: Antarctic explorations and farthest south, 88° 23′.

GROVE KARL GILBERT, 1909: Thirty years of achievements in physical geography.

CAPT. ROBERT A. BARTLETT, 1909: Far-north explorations with Peary's 1909 expedition.

CAPT. ROALD AMUNDSEN, 1907: Traverse of Northwest Passage. 1913, Special Gold Medal: Discovery of South Pole.

COMDR. ROBERT E. PEARY, 1906: Arctic explorations. 1909, Special Medal of Honor: Discovery of North Pole.

ALEXANDER GRAHAM BELL MEDAL

The Alexander Graham Bell Medal, named for the inventor and second Society President, is given for extraordinary achievement in geographic research, broadly construed.

BARBARA AND BRADFORD WASHBURN, 1980: For unique and notable contributions to geography and cartography.

GROSVENOR MEDAL

The Grosvenor Medal, named for Gilbert Hovey Grosvenor, Society President and Editor for 55 years, is awarded for exceptional service to geography by a Society officer or employee.

MELVIN MONROE PAYNE, 1982: For 50 years of dedicated service to the Society.

THOMAS WILLSON MCKNEW, 1980: For 48 years of dedicated service to the Society.

MELVILLE BELL GROSVENOR, 1974: Outstanding service to geography.

JOHN OLIVER LA GORCE, 1955: Outstanding service to the increase and diffusion of geographic knowledge, 1905-55.

GILBERT H. GROSVENOR, 1949: Outstanding service to geography as Editor of NATIONAL GEOGRAPHIC.

JOHN OLIVER LA GORCE MEDAL

The John Oliver La Gorce Medal, named for a former Society President and Editor, is presented for accomplishment in geographic exploration or in the sciences, or for public service to advance international understanding (formerly the Special Gold Medal).

ARTHUR H. ROBINSON, 1988: For outstanding achievements in cartography.

KAMOYA KIMEU, 1985: For contributions to the search for man's origins in Africa.

GEORGE F. BASS, 1979: For advancing the science of nautical archaeology.

Recipients of the 1988 National Geographic Centennial Awards join Society President and Chairman Gilbert M. Grosvenor. Standing from left: John H. Glenn, Jr., Robert D. Ballard, Kenan T. Erim, Bradford Washburn, Jane Goodall, Mr. Grosvenor, Richard E. Leakey, Thayer Soule, Sir Edmund Hillary; seated from left: George F. Bass, Harold E. Edgerton, Jacques-Yves Cousteau, Barbara Washburn, Mary D. Leakey, John J. Craighead, Frank C. Craighead, Jr. SISSE BRIMBERG

JOHN J. CRAIGHEAD AND FRANK C. CRAIGHEAD, JR.,1979: For pioneer use of biotelemetry to extend knowledge of wildlife behavior, life history, and ecology.

BEN L. ABRUZZO, MAXIE L. ANDERSON, AND LARRY NEWMAN, 1979: In recognition of the first manned transatlantic balloon flight.

PHILIP VAN HORN WEEMS, 1968: Contributions to marine, air, and space navigation.

HAROLD E. EDGERTON, 1968: Contributions to photographic and geophysical technology.

AMERICAN ANTARCTIC MOUNTAINEERING EXPEDITION, 1967: First ascent of Antarctica's highest peak, 1966-67.

CAPT. JACQUES-YVES COUSTEAU, 1961: Undersea exploration.

PRINCE PHILIP, DUKE OF EDINBURGH, 1957: Promoting science and better understanding among the world's peoples.

MRS. ROBERT E. PEARY, 1955: Contributions to husband's polar explorations.

THOMAS C. POULTER, 1937: Achievements, Byrd Antarctic expedition.

AMELIA EARHART, 1932: First solo Atlantic flight by a woman.

HUGO ECKENER, 1930: First global navigation by an airship.

FLOYD BENNETT, 1926: Flight to North Pole with Richard E. Byrd.

COL. GEORGE W. GOETHALS, 1914: Directing completion of Panama Canal.

AWARDS

CENTENNIAL AWARD, 1988

ROBERT D. BALLARD. Deep-sea explorer, marine geologist

GEORGE F. BASS. Undersea archaeologist

JACQUES-YVES COUSTEAU. Undersea explorer, inventor

FRANK C. CRAIGHEAD, JR. Bioecologist

JOHN J. CRAIGHEAD. Bioecologist

HAROLD E. EDGERTON. Electrical engineer

KENAN T. ERIM. Classical archaeologist

JOHN H. GLENN, JR. Senator, astronaut

JANE GOODALL. Zoologist

SIR EDMUND HILLARY. Mountaineer, diplomat

MARY D. LEAKEY. Archaeologist

RICHARD E. LEAKEY. Paleoanthropologist

THAYER SOULE. Lecturer

BRADFORD WASHBURN. Cartographer, photographer

BARBARA WASHBURN. Cartographer, mountaineer

JANE M. SMITH AWARD

Jane McGrew Smith directed that her bequest to the Society be used to establish an award in recognition of notable contributions to geography. The award was discontinued in 1977.

DR. CALVIN H. PLIMPTON, 1964. President, Amherst College

LYNDON B. JOHNSON, 1962. Vice President of the United States

Arleigh A. Burke, 1960. Admiral, USN, Chief of Naval Operations

Sir Bruce Ingram, 1959. Editor, *Illustrated London News*

Edwin A. Link, 1959. Inventor and undersea pioneer

Philip Van Horn Weems, 1959. Captain, USN (Ret.)

Albert A. Stanley, 1959. U.S. Coast and Geodetic Survey

Sir Vivian Fuchs, 1959. British geologist, explorer

Charles P. Mountford, 1956. Australian anthropologist

Ardito Desio, 1955. Leader, K-2 expedition

Ira S. Bowen, 1955. Astronomer

Kenneth H. Gibson, 1953. Colonel, USAF

Mrs. Franklin L. Fisher, 1953. Widow of Illustrations Editor, National Geographic

Robert B. Anderson, 1953. Secretary of the Navy

Maynard Owen Williams, 1953. Chief of Foreign Staff, National Geographic

Andrew George Latta McNaughton, 1952. General, Canadian Army (Ret.)

Mrs. Ruth B. Shipley, 1951. Passport Office, Department of State

Mrs. J. R. Hildebrand, 1951. Widow of Assistant Editor, National Geographic

Herbert Friedmann, 1951. Curator of Birds, U.S. National Museum

Hugh L. Dryden, 1951. Director, National Advisory Committee for Aeronautics

Albert E. Giesecke, 1951. Government adviser, Peru

Mrs. Henry H. Arnold, 1950. Smith life member

Mrs. Albert W. Stevens, 1950. Smith life member

Earl B. Shaw, 1949. President, Council of Geography Teachers

George J. Miller, 1949. Editor, *Journal of Geography*

John O'Keefe, 1949. U.S. Army Map Service

Benjamin R. Hoffman, 1948. Geographical Society of Philadelphia

Nicholas H. Darton, 1948. Geologist

Maurice Ewing, 1947. Geologist

Geoffrey T. Hellman, 1947. Essayist

Malcolm J. Proudfoot, 1947. Geographer

Chester W. Nimitz, 1946. Fleet Admiral, USN, Chief of Naval Operations

Salvador Massip, 1946. Geographer

S. S. Visher, 1945. Geographer

Frank M. MacFarland, 1945. President, California Academy of Sciences

Frank B. Jewett, 1945. President, National Academy of Sciences

Christova Leite de Castro, 1944. Brazilian geographer

Mrs. William G. Paden, 1943. Author

Edmund W. Starling, 1943. U.S. Secret Service

Harry Warner Frantz, 1943. Journalist

Eli Helmick, 1943. Major General, USA (Ret.)

Alexander M. Patch, 1943. Major General, USA

Samuel Whittemore Boggs, 1943. Department of State geographer

Charles H. Deetz, 1942. Cartographer, U.S. Coast and Geodetic Survey

J. Fred Essary, 1941. Journalist

George W. Goddard, 1940. Major, USAF, aerial photographer

Franklin Adams, 1938. Authority on Latin America

Stephen R. Capps, 1938. Geologist

Web Hill, 1937. Merchant

Prince Iesato Tokugawa, 1937. Japan

W. J. Peters, 1936. U.S. Geological Survey, retired

Robert Muldrow, 1936. U.S. Geological Survey, retired

H. L. Baldwin, 1936. U.S. Geological Survey, retired

A. E. Murlin, 1936. U.S. Geological Survey, retired

His Majesty King Leopold, 1936. Belgium

Herbert Hollick-Kenyon, 1936. Pilot, Canadian Airways

Samuel S. Gannett, 1936. Geographer

Rogers Birnie, Jr., 1936. USA (Ret.)

Randolph P. Williams, 1936. Captain, U.S. Army Air Corps

Lawrence J. Burpee, 1936. Canadian commissioner

William R. Pope, 1935. Colonel, USA

Joseph P. Connolly, 1935. Geologist, college president

Leonhard Stejneger, 1935. Biologist

Clifford K. Berryman, 1934. Political cartoonist

W. Coleman Nevils, S. J., 1934. Classicist, President, Georgetown University

Charles F. Marvin, 1934. Meteorologist

James P. Thomson, 1934. Royal Geographical Society of Australia

Vernon Bailey, 1934. Naturalist

Eugene Edward Buck, 1934. President, American Society of Composers, Authors and Publishers

William H. Hobbs, 1933. Geologist

Laurence M. Gould, 1931. Biologist

Albert W. Stevens, 1931. Captain, USA, aerial photographer

André Citroën, 1931. French industrialist

Douglas W. Johnson, 1931. Physiographer

Ashley C. McKinley, 1931. Captain, USA, aerial photographer

Sir Wilfred Grenfell, 1930. Surgeon, missionary, author

Cornelius A. Pugsley, 1929. Banker, conservationist

Herbert Putnam, 1929. Librarian of Congress

Andrew E. Douglass, 1929. Astronomer, dendrochronologist

Curtis D. Wilbur, 1929. Secretary of the Navy, retired

Charles A. Lindbergh, 1927. Transatlantic flight pioneer

Knud Rasmussen, 1926. Greenland explorer

William Brooks Cabot, 1925. Author, engineer

Philip Sidney Smith, 1925. Geologist

Joseph F. Rock, 1925. Explorer

Neil M. Judd, 1925. Archaeologist

Robert A. Bartlett, 1925. Far-north explorer

Charles Sheldon, 1925. Alaska explorer

Donald B. MacMillan, 1921. Explorer, Lieutenant, USNR

R. G. McConnell, 1921. Canadian explorer

Frank M. Chapman, 1921. Ornithologist

Herbert E. Gregory, 1921. Geologist

J. B. Tyrrell, 1921. Explorer

Joseph Strauss, 1919. Rear Admiral, USN

O. F. Cook, 1919. Plant explorer

Robert F. Griggs, 1919. Geographer

Walter T. Swingle, 1919. Plant explorer

Edward W. Nelson, 1919. Biologist

Stephen T. Mather, 1919. National Park Service Director

William H. Holmes, 1919. Curator

William H. Dall, 1919. Naturalist

Frank G. Carpenter, 1919. Journalist

George Kennan, 1917. Authority on Russia

Henry Pittier, 1917. Agriculturist

Hiram Bingham, 1917. Historian, explorer

Alfred H. Brooks, 1917. Geologist

FRANKLIN L. BURR AWARD

Mary C. Burr bequeathed a fund to the Society in memory of her father. Income is used to award cash prizes to leaders of the Society's expeditions and research projects for especially meritorious work in the field of geographic science.

Biruté M. F. Galdikas, 1981. Anthropologist

Fred A. Urquhart and Norah R. Urquhart, 1979. Entomologists

Jared M. Diamond, 1979. Ornithologist

Kenan T. Erim, 1973. Classical archaeologist

Dian J. Fossey, 1973. Zoologist

Maynard M. Miller, 1967. Glaciologist

Norman G. Dyhrenfurth, 1965. Mountaineer

Richard E. Leakey, 1965, 1973. Anthropologist

Helge Ingstad and Anne Stine Ingstad, 1964. Archaeologists

Barry C. Bishop, 1963. Mountaineer and glaciologist

Rear Adm. Donald B. MacMillan, 1963. Polar explorer

Jane Goodall, 1962, 1964. Zoologist

Louis S. B. Leakey and Mary D. Leakey, 1961. Anthropologists

Carl F. Miller, 1959. Archaeologist

Robert F. Griggs, 1956. Geographer

Mrs. Marie Peary Stafford, 1955. Scientific collaborator

Mrs. Robert E. Peary, 1955. Scientific collaborator

Neil M. Judd, 1955, 1963. Archaeologist

Harold E. Edgerton, 1952. Electrical engineer

Frank M. Setzler, 1950. Anthropologist

Charles P. Mountford, 1950. Anthropologist

Arthur A. Allen, 1948. Ornithologist

Edward A. Halbach, Francis J. Heyden, S. J., Carl W. Miller, and Charles H. Smiley, 1948. Astronomers

George Van Biesbroeck, 1947, 1948, 1953. Astronomer

Lyman J. Briggs, 1945, 1954, 1962. Chairman, Committee for Research and Exploration, National Geographic Society

Thomas A. Jagger, 1945. Engineer

Alexander Wetmore, 1944. Ornithologist

Mrs. Matthew W. Stirling, 1941. Archaeologist

Matthew W. Stirling, 1939, 1941, 1957. Archaeologist

Bradford Washburn, 1939, 1965. Geographer

Dr. and Mrs. William M. Mann, 1938. Zoologists

Capt. Randolph P. Williams, 1936. Aeronaut

Capt. Orvil A. Anderson, 1936. Aeronaut

Capt. Albert W. Stevens, 1933, 1936. Aeronaut

ARNOLD GUYOT MEMORIAL AWARD

This award, named for a distinguished professor of geology at Princeton University, was established from a bequest to recognize outstanding accomplishments in geology and paleontology.

Mary R. Dawson and Robert M. West, 1981. Vertebrate paleontologists

Richard L. Hay, 1978. Geologist

Robert W. Wilson, 1974. Paleontologist

Herbert Friedmann and William J. Morris, 1968. Paleontologists

SPECIAL NATIONAL GEOGRAPHIC SOCIETY AWARD

Heslon Mukiri Githua, 1968. Scientific collaborator

Library of Congress CIP Data

National geographic index, 1888-1988

1. National geographic-Indexes. 2. Geography—Periodicals—Indexes. I. National Geographic Society (U.S.)
G1.N27 Suppl. 2 910'.5 88-33086
ISBN 0-87044-764-5
ISBN 0-87044-765-3 (deluxe ed.)

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"For the increase and diffusion of geographic knowledge"

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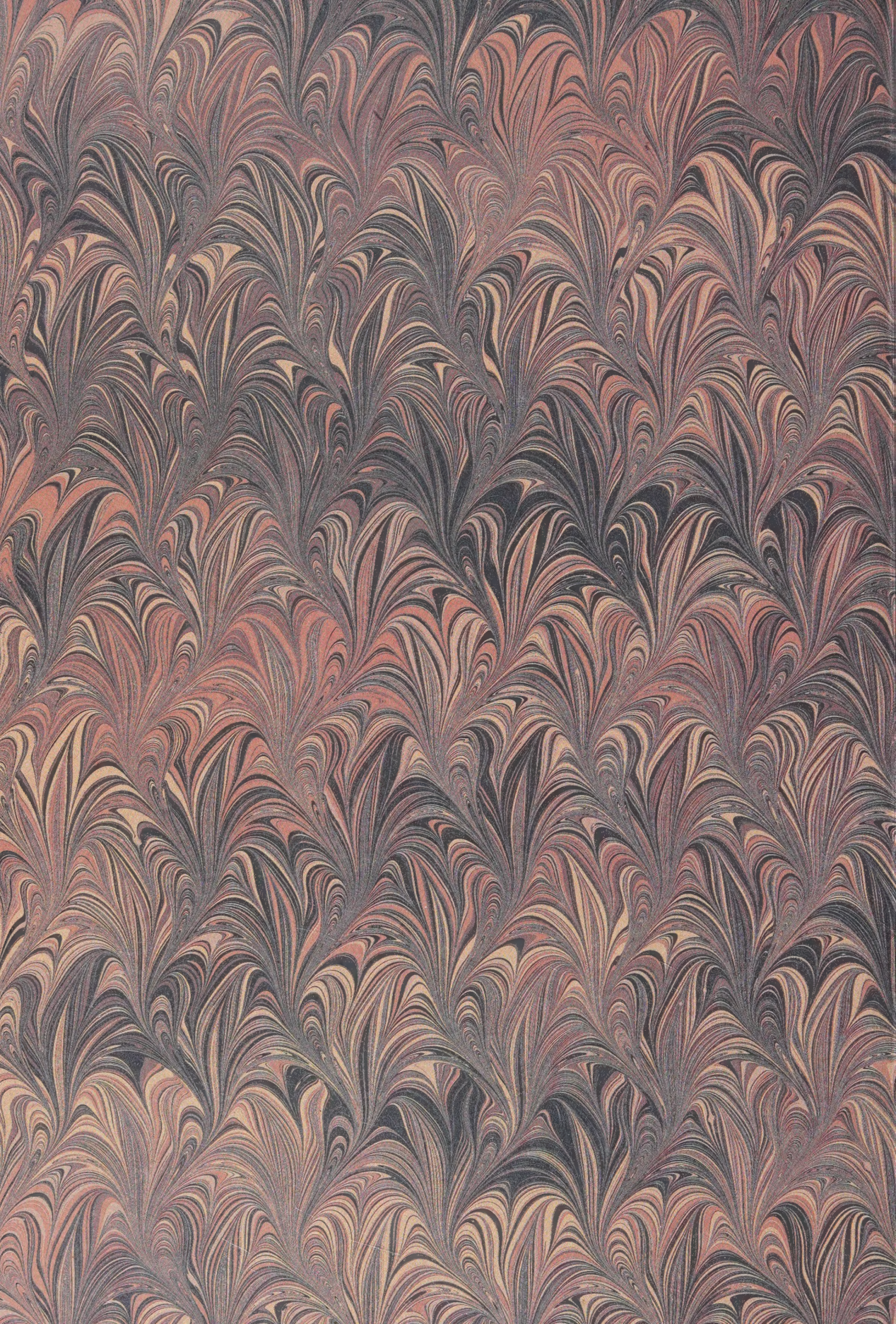
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